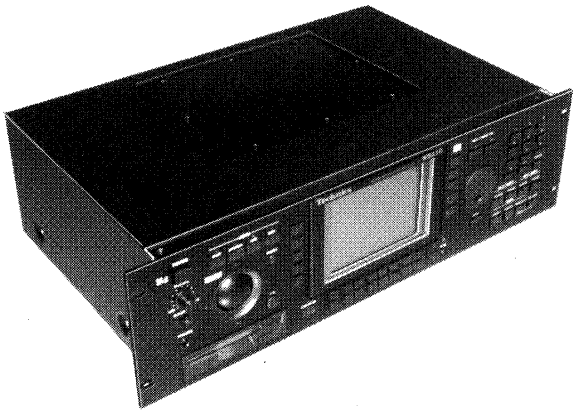
ORDER NO. EMID951604
A5

# Service Manual

## SYNTHESIZER MODULE

# SX-WSA1R

(M), (MC), (XM), (EN), (EH), (EF), (EZ), (EW), (EA), (EP), (EK), (XL), (XR), (XS), (XD), (XT), (X), (XP)



**AREAS**

(M): U.S.A.
(MC): Canada
(XM): Mexico
(EN): Norway, Sweden, Denmark, Finland
(EH): Holland, Belgium
(EF): France, Italy
(EZ): Germany
(EW): Switzerland
(EA): Austria
(EP): Spain, Portugal, Greece, Singapore, South Africa
(EK): the United Kingdom
(XL): New Zealand
(XR): Australia
(XS): Malaysia
(XD): Saudi Arabia, Hong Kong, Kuwait
(XT): Taiwan
(X): Thailand, Indonesia, Iran, U.A.E., Panama, Argentina, Peru, Brasil
(XP): Philippines

**⚠ WARNING**

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

## ■ Specifications

| | | |
|---|---|---|
| SOUND GENERATOR | | ACOUSTIC MODELING SYNTHESIS |
| MAXIMUM NUMBER OF NOTES PRODUCED SIMULTANEOUSLY | | 64 NOTES (32 PARTS MAX.) |
| SOUND | | PRESET (ROM): 256 SOUNDS +16 DRUM KITS, 128 COMBINATIONS<br>USER: 256 SOUNDS + 4 DRUM KITS, 128 COMBINATIONS<br>RE-MAP: 1, 2, 3 (GENERAL MIDI) |
| BANK | | USER 1, 2, ROM/EXT |
| CONTROLLER | | REALTIME CREATOR |
| EDIT | SOUND | MODELING, TONE LAYER, PITCH, FILTER, AMPLITUDE, DIGITAL EFFECT, DSP EFFECT, CONTROLLER |
| | COMBINATION | INTERNAL SOUND, MIDI SOUND, CONFIGURE, MIXER, DSP EFFECT |
| DIGITAL EFFECT | | 12 TYPES |
| DSP EFFECT | | EFFECT 44 TYPES, REVERB 12 TYPES |
| PART | | INTERNAL SOUND, CONFIGURE, MIDI OUTPUT FILTER, MIXER, DSP EFECT |
| SYSTEM | | TUNE & SCALE, TEST, CONTROLLER ASSIGN, MIXER, DSP EFFECT, INITIAL, RE-MAP EDIT,<br>SOUND/COMBI MANAGER, DRUMS MAP, MAIN OUT EQUALIZER |
| MIDI | | TOTAL MODE, INPUT&OUTPUT FILTER, PROGRAM CHANGE MIDI OUT, SYSEX BULK DUMP, GENERAL MIDI |
| DISK | | BUILT-IN 3.5 inch FLOPPY DISK DRIVE FOR 2HD (1.44 MB), 2DD (720 KB)<br>DISK LOAD, DISK SAVE, MIDI FILE DIRECT PLAY, DISK FORMAT, LOAD SINGLE SOUND, LOAD SINGLE COMBINATION |
| DISPLAY | | LCD (320×240 DOTS )<br>PAGE, CONTRAST, EXIT |
| OTHERS | | VOLUME, DATA ENTRY DIAL/KEYS, COMPARE |
| TERMINALS | | PHONES, MAIN OUT (R, L/MONO), SUB OUT (R, L/MONO), MIDI (IN, OUT, THRU ) ×2 |
| POWER REQUIREMENT | | 23 W, 35W (NORTH AMERICA) |
| | | AC120/220/240 V 50/60 Hz<br>AC120 V 60 Hz (NORTH AMERICA AND MEXICO)<br>AC230 V 50/60 Hz (NEW ZEALAND AND PHILIPPINES)<br>AC230–240 V 50/60 Hz (EUROPE) |

Technics

| | |
|---|---|
| DIMENSIONS (W × H × D ) | 48.2 cm × 14.1 cm × 25.2 cm (18-31/32" × 5-17/32" × 9-15/16") |
| NET WEIGHT | 6.5 kg (14.3 lbs.) |
| ACCESSORIES | AC CORD, DEMO DISK, MIDI CABLE |

•Specifications are subject to change without notice for further improvement.

# WARNING

To prevent the risk of fire, smoke, or electrical shock and to ensure safe operation, please be sure to follow the safety guidelines below.

1. At places where special caution is required, the necessary safety precautions are clearly labeled or printed, for example, on the cabinet, or on the part concerned. Please follow these safety precautions, and also those listed in the Owner's Manual.

2. Parts which have a ⚠ mark in the circuit diagram or in the parts list are essential for safety. When replacing these parts, be sure to use only the specified parts.

3. Use the specified types for internal wiring (double-insulated wiring, etc.).

4. When replacing parts on the AC primary side (power transformer, electric switch, electrical cord, noise-prevention condenser, etc.), wind the lead wire and secure it by soldering.

5. Do not let the wiring come into contact with heat-emitting devices (fuse resistor, radiator plate, etc.).

6. When replacing the wiring, make sure that it is not in contact with the unfinished or rough edge of a part.

7. When replacing the power cord (except for the plug-in type), tug it from various directions to confirm that it does not slip out of place.

8. Spacing
   If soldering was done on the AC primary circuit, confirm that the interval between the soldered terminals or between the terminal and surrounding metallic parts is at least the minimum required (Between the primary circuit and the chassis: at least 6.5 mm; between primary circuit terminals: at least 4.0 mm; between primary circuit terminals and secondary circuit terminals: at least 6.5 mm.).

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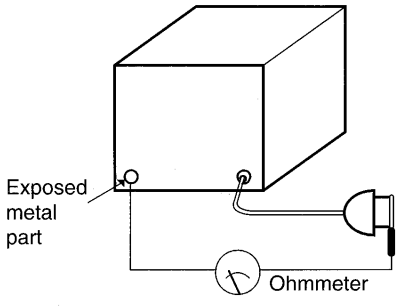
# SAFETY PRECAUTION (This "safety precaution" is for the U.S.A. only)

## ● Safety Precaution

1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only the manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc..
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

## ● Insulation Resistance Test

1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with an ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screw heads, connectors, control shafts, handle brackets, etc..Measurements should range from 4 MΩ to infinity for all exposed parts.

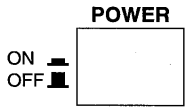



Resistance = 4MΩ to ∞

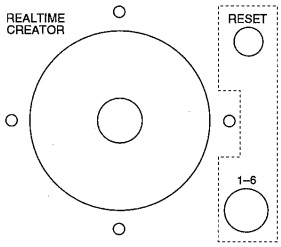
# INITIAL SETTING

■ The initial setting function is used to return to the original factory settings, and to reset the customer settings and misoperations.

1. Press the **POWER** button to turn off the instrument.

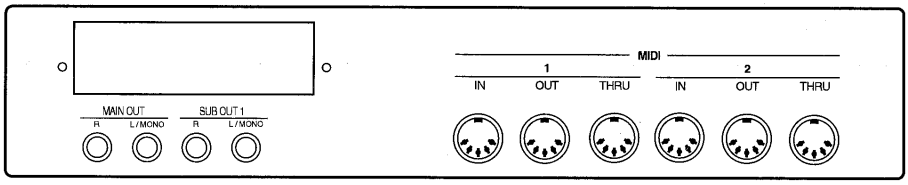



2. While pressing the **1-6** button and the **RESET** button in the **REALTIME CREATOR** section at the same time, turn the **POWER** button on again.




**NOTE:**
All stored data (**SOUND** and **COMBINATION** data is preserred.) are initialized with this operation.

# TERMINALS




**(on the rear panel)**

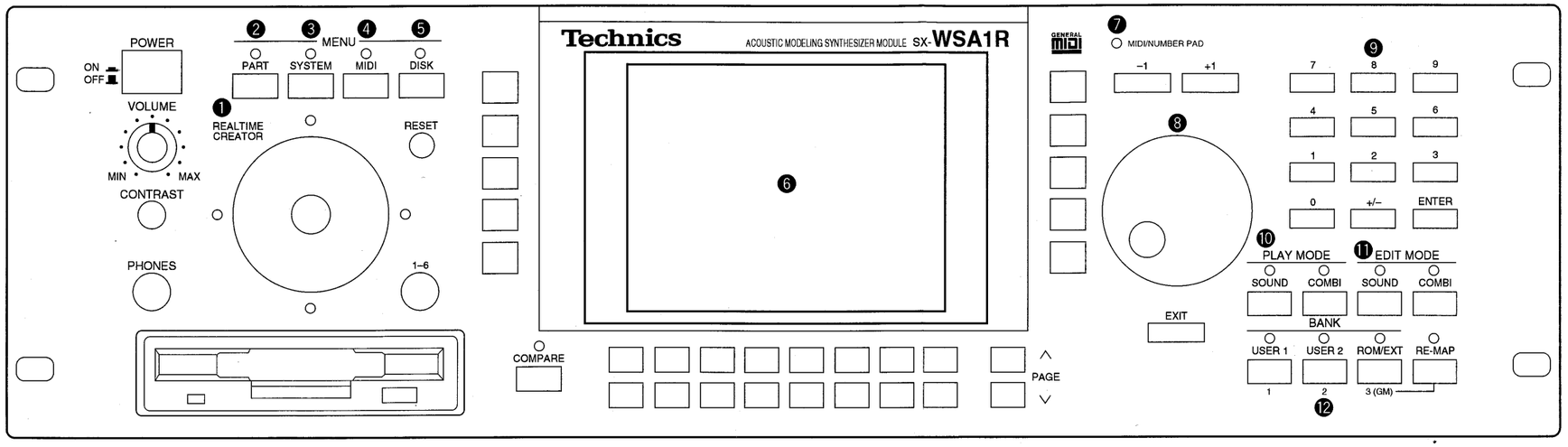
**MAIN OUT** (Output level 1.5 Vrms, 600 Ω)
This terminal is for main output. To output monaural signals, connect the external equipment to the **L/MONO** terminal. (Do not connect the **R** terminal.)

**SUB OUT 1** (Output level 1.5 Vrms, 600 Ω)
This terminal is for sub output. To output monaural signals, connect the external equipment to the **L/MONO** terminal. (Do not connect the **R** terminal.)

**MIDI (Musical Instrument Digital Interface)**
MIDI is the standard specification that enables connection to equipment such as synthesizers and personal computers. Data transmission and reception are possible between the Technics Synthesizer Module and other instrument provided with MIDI terminals.

**IN :** The terminal that receives data from external equipment.
**OUT :** The terminal that transmits data from this instrument to external equipment.
**THRU:** The terminal that transfers data from the **IN** terminal directly to other equipment.
• Use a 5-pin DIN cord (less than 15 m long) for these connections.

# ARRANGEMENT OF CONTROL PANEL




**❶ REALTIME CREATOR**
Modify the characteristics of the sounds during your performance. You can return the sound to its original state by pressing the **RESET** button.

**❷ PART**
The settings for each part of this instrument can be adjusted to serve your personal preferences and requirements.

**❸ SYSTEM**
The settings for the whole instrument can be adjusted.

**❹ MIDI**
Select the various settings which are used for **MIDI** operation of this instrument.

**❺ DISK**
The Disk Drive enables you to store panel data, sound data, etc. for future use.

**❻ Display**
The display shows the status of your performance and the various instrument settings at a glance.

**❼ MIDI / NUMBER PAD indicator**
The indicator is lit when MIDI data is begin received, or when the number pad can be used to enter number.

**❽ Data entry controls**
Use these controls when setting a function and specifying a numerical value.



**❾ Number pad**
Input and enter numbers during setting procedures.

**❿ PLAY MODE**
Two modes are available for playing this instrument.

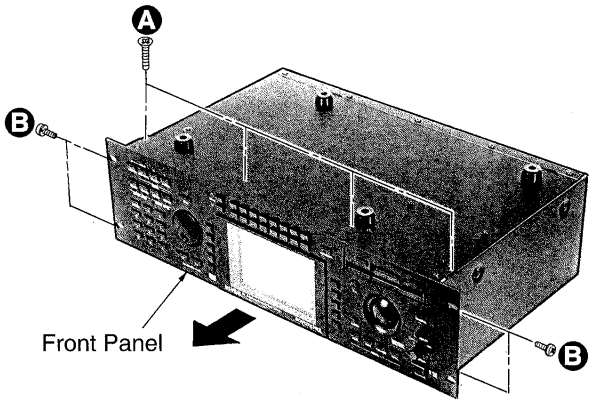
**⓫ EDIT MODE**
Edit **SOUND** and **COMBINATION**.

**⓬ BANK**
Select the bank of the **SOUND** or **COMBINATION** used for your performance.

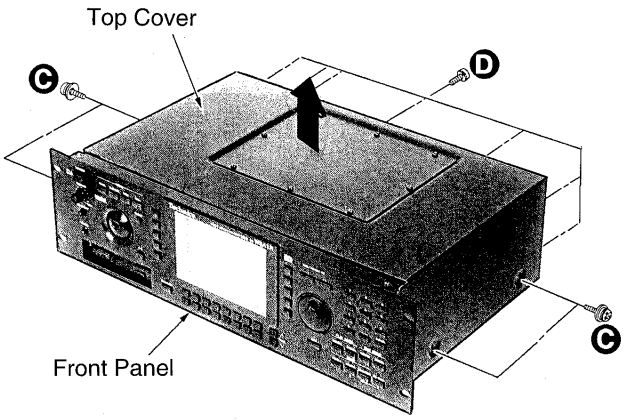
# DISASSEMBLY INSTRUCTIONS

## 1 Removing the front panel and the top cover

1. Turn the unit up side down as shown in Fig. 1, and remove the screws (Ⓐ 4 pcs. and Ⓑ 4 pcs.).
2. Pull out the front panel slightly.
3. Place the unit bottomside down.
4. Remove the top cover holding screws (Ⓒ 4 pcs. and Ⓓ 7 pcs.).
5. Lift the top cover straight up to remove it.
6. Remove the front panel from the unit.




[Fig. 1]




[Fig. 2]

## 2 Removing the MAIN, ACP, and INV printed circuit boards

• Open the top cover (see step 1).

**MAIN P.C.B.**

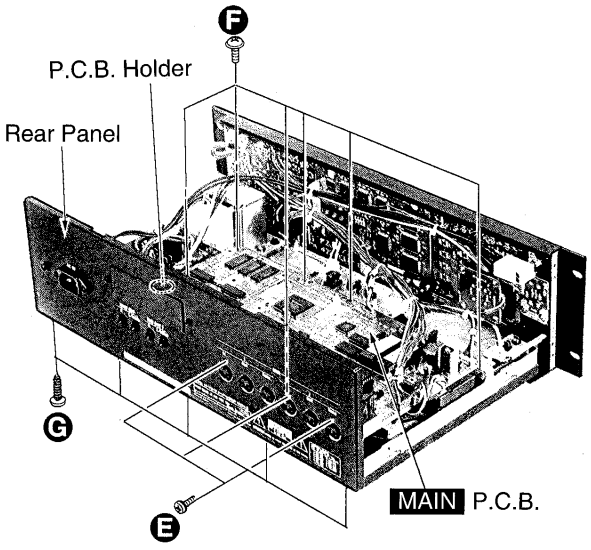
1. Remove the MAIN P.C.B. holding screws (Ⓔ 3 pcs. and Ⓕ 6 pcs.).
2. Remove the rear panel holding screws (Ⓖ 5 pcs.), and remove the rear panel.
3. Release the claw of the P.C.B. holder.

**ACP P.C.B.**

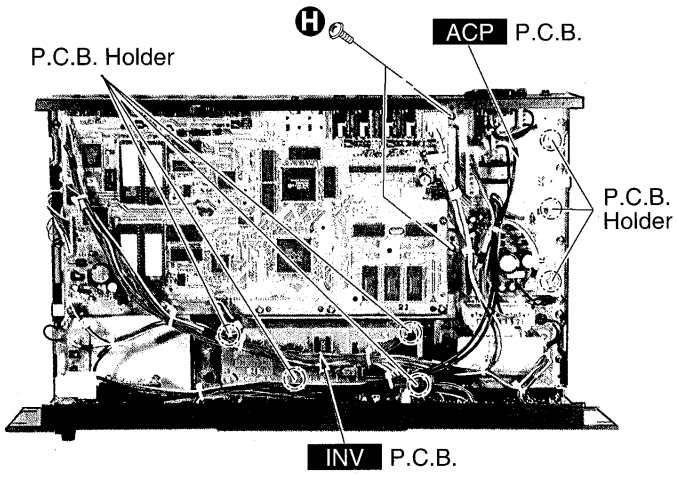
1. Remove the ACP P.C.B. holding screws (Ⓗ 2 pcs.).
2. Release the claw of the P.C.B. holder.

**INV P.C.B.**

• Release the claw of the P.C.B. holder.




[Fig. 3]




[Fig. 4]

## 3 Removing the CP1, LCD, MB2, CP2, and HP printed circuit boards

• Remove the front panel from the unit (see step 1).

**CP1 P.C.B.**

• Remove the CP1 P.C.B. holding screws (❶ 14 pcs.).

**LCD P.C.B.**

• Remove the LCD P.C.B. holding screws (❹ 4 pcs.).

**MB2 P.C.B.**

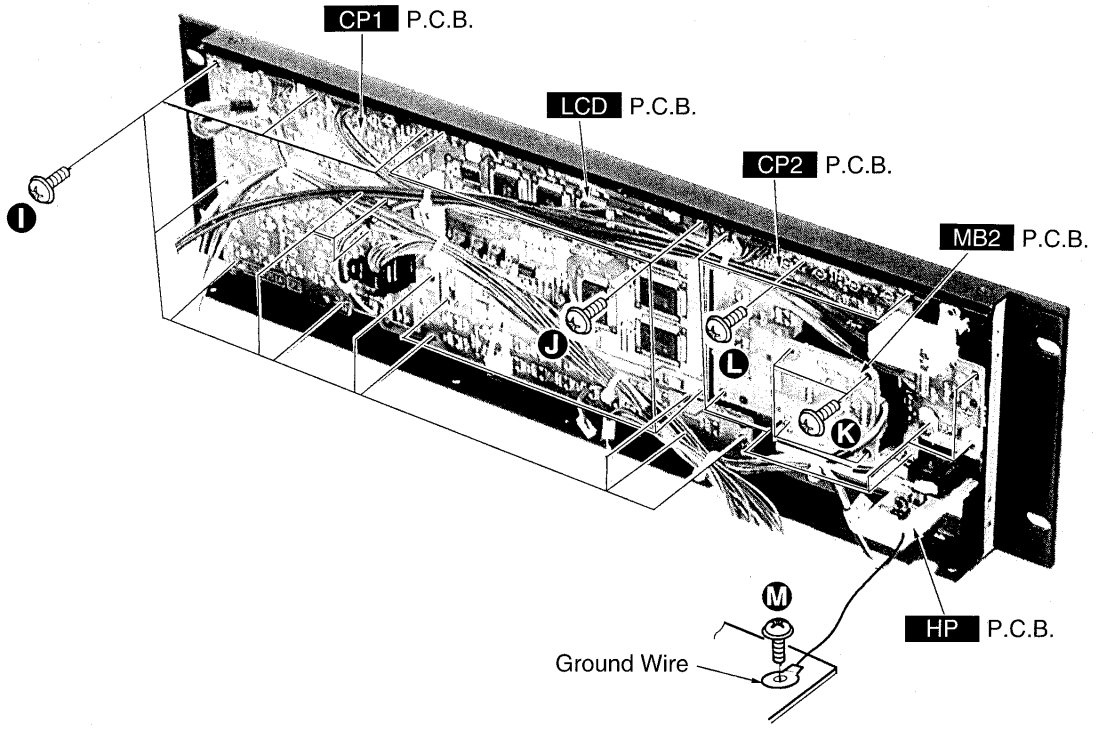
• Remove the MB2 P.C.B. holding screws (❽ 4 pcs.).

**CP2 P.C.B.**

• Remove the CP2 P.C.B. holding screws (❿ 9 pcs.).

**HP P.C.B.**

1. Of the CP2 P.C.B. holding screws (❿ 9 pcs.), remove the 2 which are also HP P.C.B. holding screws.
2. Remove the ground wire holding screw (⓫ 1 pc.).




[Fig. 5]

# SYMPTOMS WHICH APPEAR TO BE SIGNS OF TROUBLE

The following changes in performance may occur in the Technics Synthesizer Module but do not indicate trouble.

| | Phenomenon | Remedy |
|---|---|---|
| Sounds and effects | The buttons, keys, etc. malfunction. | • Turn off the **POWER** button once, then turn it on again. If this procedure is not successful, turn off the **POWER** button once. Then, while pressing the **REALTIME CREATOR 1-6** button and **RESET** button at the same time, turn the **POWER** button on again. |
| | No sound is produced when the keys are pressed. | • The **VOLUME** is at the minimum setting. Adjust the volume with the **VOLUME** control.<br>• The volumes for the selected parts are set to the minimum levels. Set the volumes of the relevant parts to appropriate levels. |
| | Only percussive instrument sounds are produced when the connected keyboard is played. | • The DRUM bank is selected. |
| | Some sounds cannot be selected. | • When the GENERAL MIDI status is set to on, The sounds which can be selected and operation which can be executed are limited. Turn the GENERAL MIDI status off to return the instrument to its normal operation. |
| | You tried to store an edited sound, but it could not be stored. | • You cannot store a sound if MEMORY PROTECT is set to ON; set it to OFF. |

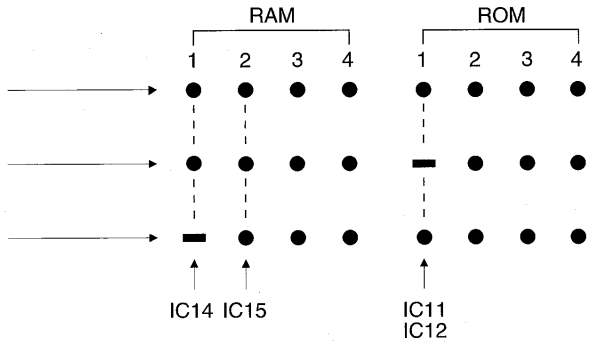
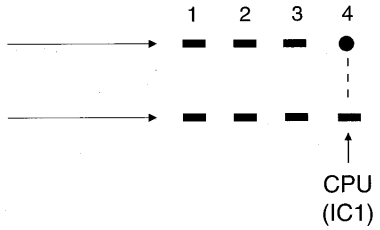
| | Phenomenon | Remedy |
|---|---|---|
| Disk Drive | The Disk Drive produces a noise during recording or playback. | • This occurs when the Disk Drive is reading a disk. It does not indicate a problem. |
| | When the procedure to load from a disk is performed, the contents of this instrument's memory are erased. | • When performing the load operation from a disk, this instrument's memory changes to that of the data loaded from the disk. If you wish to preserve data which are stored in the memory, save it on a disk before performing the load procedure. |
| Other | Noise from a radio or TV can be heard. | • This sometimes occurs when electrical equipment such as a radio or TV is used near the instrument. Try moving such electrical equipment further away from the instrument.<br>• The sound may be coming from a nearby broadcast station or amateur radio station. If the sound is bothersome, consult your dealer or service center. |
| | The cabinet becomes warm during use. | • This instrument has a built-in power source that heats the cabinet to some degree. This is not an indication of trouble. |

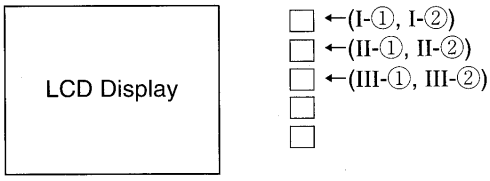
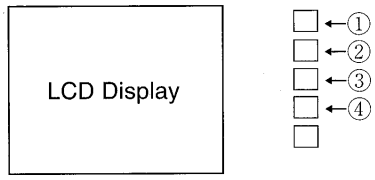
# ERROR DISPLAY

| No. | Contents |
|---|---|
| 00 | The data on the disk that you are using is for a different product. |
| 01 | An error has occurred while the disk was loading.<br>Please try again! |
| 02 | There is no disk in the Disk Drive. |
| 03 | The file that you tried to load is empty. |
| 05 | An error has occurred while the disk was saving.<br>Please try again! |
| 06 | The disk that you are using is write protected.<br>Please remove the write protection and try again. |
| 07 | The disk that you are using is full. Please use another disk. |
| 08 | An error has occurred while the disk was formatting. The disk that you are using may be faulty. Please try formatting another disk. |
| 10 | The data is already copy protected. |
| 21 | Memory full |
| 28 | This song is too long to be saved as a MIDI file. |
| 40 | The Identification (ID) code of the system exclusive data received by the **WSA** is for a different product. |
| 41 | An error has occurred during system exclusive data reception. The data from the transmitting device may be incomplete. Please try again. |
| 42 | An error has occurred during system exclusive transmission. The data has not been received correctly. Please try again. |
| 58 | The song that you have tried to load exceeds the **WSA**'s available memory and cannot be loaded. The selected song memory has been cleared. Please clear existing songs in the instrument's memory using SONG CLEAR to make more memory available, and try again. |

# ABOUT THE SELF-DIAGNOSTIC FUNCTION

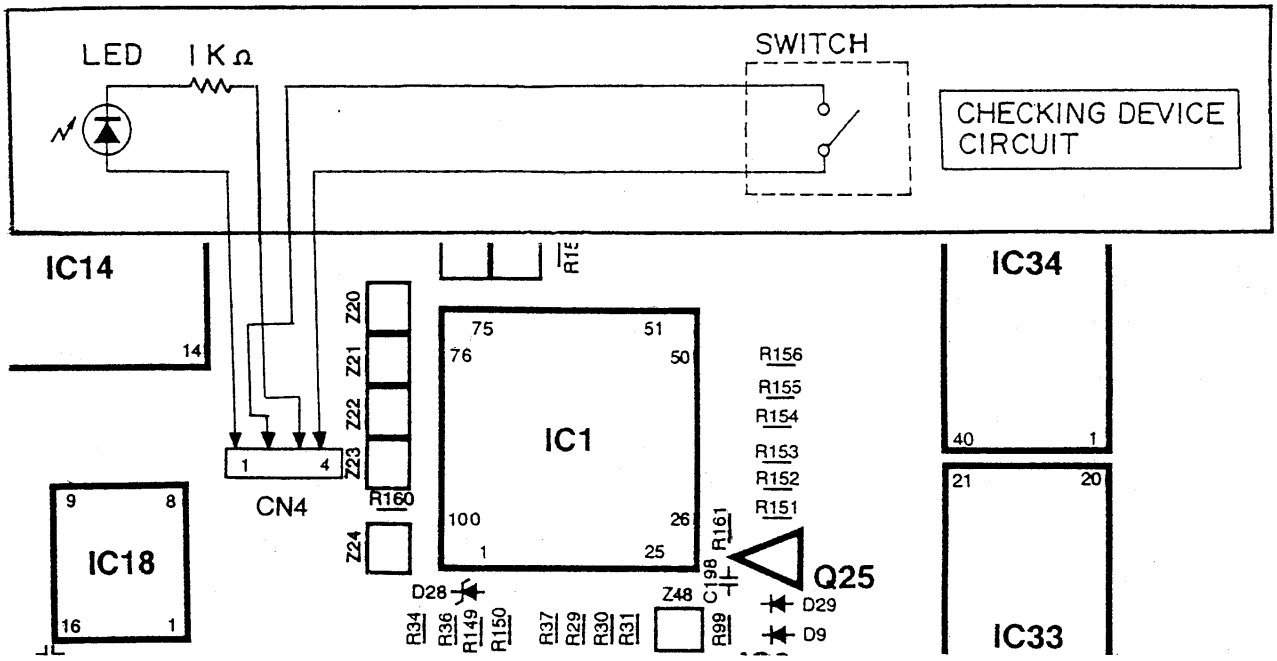
This model has some self-diagnostic capabilities. When set to the self-diagnostic mode, operation of various components can be verified by following the procedures in the chart below.

<table>
<tr><th>No.</th><th>PCB</th><th>TEST MODE</th><th>Procedure</th></tr>
<tr><td rowspan="2">1</td><td rowspan="2">MAIN</td><td>RAM (IC14, 15), ROM (IC11, 12) check</td><td>1. Connect the CHECKING DEVICE (refer to page I-12) to CN4 on the MAIN P.C.B., and turn on the CHECKING DEVICE switch.<br>2. Turn on the power switch.</td></tr>
<tr><td colspan="2">When the power switch is turned on, the LED of the CHECKING DEVICE flashes 8 times. The first 4 flashes are for the RAM check, and the latter 4 flashes are for the ROM check. The order of the LED flashes corresponds to the respective IC numbers as shown below. If an IC is defective, the corresponding flash time is longer.<br><br>Examples<br>1. RAM OK, ROM OK<br>2. RAM OK, ROM (IC11, 12) defective<br>3. RAM (IC14) defective, ROM OK<br><br>NOTE : ● indicates short flash time<br>▬ indicates long flash time<br><br> 
</td></tr>
<tr><td rowspan="2">2</td><td rowspan="2">CP1</td><td>CPU (IC1) check</td><td>1. Connect the CHECKING DEVICE to CN4 on the MAIN P.C.B. (The CHECKING DEVICE switch should be off).<br>2. Press and hold the 2 key on the Number Pad, and then turn on the power switch.</td></tr>
<tr><td colspan="2">When the power switch is turned on, the LED of the CHECKING DEVICE flashes 4 times. The order of the LED flashes corresponds to the CPU (IC) on the respective P.C.B.s as shown below. If an IC is defective, the corresponding flash time is longer.<br><br>1. CPU (IC1) OK<br>2. CPU (IC1) defective<br><br>NOTE : ● indicates short flash time<br>▬ indicates long flash time<br><br> 
</td></tr>
<tr><td rowspan="2">3</td><td rowspan="2">CP1<br>CP2</td><td>Control Panel LED check</td><td>Press and hold the 4 key on the Number Pad, and then turn on the power switch.</td></tr>
<tr><td colspan="2">Press the buttons on the control panel and confirm that the corresponding LEDs light.</td></tr>
</table>

<table>
<tr><th>No.</th><th>PCB</th><th>TEST MODE</th><th>Procedure</th></tr>
<tr><td>4</td><td>MAIN</td><td>Wave ROM check<br>MAIN: IC43–45, 47–49<br>Generator IC Outsel check</td><td>Press and hold the 3 key on the Number Pad, and then turn on the power switch.</td></tr>
<tr><td></td><td></td><td colspan="2">When set to the self-diagnostic mode, the Wave ROM outputs a sine wave. The Wave ROMs correspond to the buttons as shown in the diagram to the right. When a button is pressed, the corresponding sine wave sound is produced. If no sound is produced, or if the sound is distorted, the Wave ROM corresponding to that button is defective.<br>• The button indicates the Wave ROM number.<br>(I-①: IC43, I-②: IC47, II-①: IC44, II-②: IC48, III-①: IC45, III-②: IC49)<br>  <br>• Generator IC Outsel check<br>(①: MAIN OUT, ②: SUB OUT 1, ③: SUB OUT 2, ④: SUB OUT 3)<br>  </td></tr>
<tr><td>5</td><td>LCD</td><td>LCD check</td><td>Press and hold the 5 key on the Number Pad, and then turn on the power switch.</td></tr>
<tr><td></td><td></td><td colspan="2">When set to the self-diagnostic mode, the test pattern is shown on the display. Monitor the display to confirm that the characters appear correctly.</td></tr>
</table>

## ■ Connection between serving CHECKING DEVICE and MAIN P.C.B.

**NOTE:** The order of the MAIN P.C.B. terminals differs from previous models.



# MIDI IMPLEMENTATION CHART

**Synthesizer Module [SX-WSA1R]** **(Transmitted)**

| Function | | PART1～32 | Remarks |
|---|---|---|---|
| **Basic** | Default | 1–1～2–16 | MIDI1: 1–1～1–16, MIDI2: 2–1～2–16 |
| **Channel** | Changed | 1–1～2–16 | Single Channel: 1–1～1–16 |
| **MODE** | Default | 3 | OMNI OFF, POLY MODE |
| | Messages | × | |
| | Altered | – | |
| **Note** | | 0–127 | |
| **Number** | True Voice | – | |
| **Velocity** | Note ON | ○ | |
| | Note OFF | × | |
| **After** | Key's | × | |
| **Touch** | Ch's | ○×* | |
| **Pitch Bend** | | ○×* | |
| **Control Change** | 0,32 | ○×* | bank select MSB, LSB |
| | 1,2 | | modulation 1, 2 default |
| | 4 | | control pedal default |
| | 6,38 | | data entry MSB, LSB |
| | 7 | | volume |
| | 10 | | panpot |
| | 11 | | expression |
| | 16,17 | | realtime creator X, Y default |
| | 18,19 | | realtime controller X, Y default |
| | 64 | | hold1 |
| | 81 | | realtime creator SW1–6 |
| | 91 | | reverb depth |
| | 93,94 | | effect1, 2 depth |
| | 100,101 | | RPN LSB, MSB |
| | 120 | | all sound off |
| | 121 | | reset all controllers |
| **Prog** | | ○×* | |
| **Change** | True# | – | |
| **System Exclusive** | | ○×* | |
| **System** | Song Pos | ○×* | MIDI 1 only |
| **Common** | Song Sel | ○×* | MIDI 1 only |
| | Tune | × | |
| **System** | Clock | ○ | MIDI 1 only |
| **Real time** | Commands | ○×* | MIDI 1 only |
| **Aux** | Local ON/OFF | × | |
| **Messages** | ALL notes OFF | × | |
| | Active Sense | ○ | |
| | Reset | × | |
| **Notes** | | ○×*.....Whether or not the data for each of these items is transmitted can be set. | |

**Mode1:** OMNI ON,POLY **Mode2:** OMNI ON,MONO ○:Yes

**Mode3:** OMNI OFF,POLY **Mode4:** OMNI OFF,MONO ×:No

**Synthesizer Module [SX-WSA1R]** **(Recognized)**

| Function | | PART1～32 | Remarks |
|---|---|---|---|
| **Basic** | Default | 1–1～2–16 | MIDI1: 1–1～1–16, MIDI2: 2–1～2–16 |
| **Channel** | Changed | 1–1～2–16 | Single Channel: 1–1～1–16 |
| **MODE** | Default | 3 | OMNI OFF, POLY MODE |
| | Messages | × | |
| | Altered | – | |
| **Note** | | 0–127 | |
| **Number** | True Voice | 12–120 / 0–127 | Normal Sound:12–120, Drum Sound:0–127 |
| **Velocity** | Note ON | ○ | |
| | Note OFF | × | |
| **After** | Key's | × | |
| **Touch** | Ch's | ○× * | |
| **Pitch Bend** | | ○× * | |
| **Control Change** | 0,32 | ○× * | bank select MSB, LSB |
| | 1,2 | | modulation 1, 2 default |
| | 4 | | control pedal default |
| | 6,38 | | data entry MSB, LSB |
| | 7 | | volume |
| | 10 | | panpot |
| | 11 | | expression |
| | 16,17 | | realtime creator X, Y default |
| | 18,19 | | realtime controller X, Y default |
| | 64 | | hold1 |
| | 81 | | realtime creator SW1–6 |
| | 91 | | reverb depth |
| | 93,94 | | effect1, 2 depth |
| | 100,101 | | RPN LSB, MSB |
| | 120 | | all sound off |
| | 121 | | reset all controllers |
| **Prog** | | ○× * | |
| **Change** | True# | 0–127 | |
| **System Exclusive** | | ○× * | |
| **System** | Song Pos | ○× * | MIDI 1 only |
| **Common** | Song Sel | ○× * | MIDI 1 only |
| | Tune | × | |
| **System** | Clock | ○× * | MIDI 1 only |
| **Real time** | Commands | ○× * | MIDI 1 only |
| **Aux** | Local ON/OFF | × | |
| **Messages** | ALL notes OFF | ○ | |
| | Active Sense | ○ | |
| | Reset | × | |
| **Notes** | | ○× *.....Whether or not the data for each of these items is recognized can be set. | |

**Mode1:** OMNI ON,POLY **Mode2:** OMNI ON,MONO I - 14 ○:Yes
**Mode3:** OMNI OFF,POLY **Mode4:** OMNI OFF,MONO ×:No

# PRECAUTIONS BEFORE SERVICING

## ■ Precautions for measuring of the output waveforms.

1. The waveform was measured with a "National Digital Storage Oscilloscope VP-5730A". Therefore the waveforms of musical tone signals shown may differ somewhat due to the difference in the timing of triggering.
2. Since the 1/10 test probe is used, the indicated voltage value on the bottom part of each waveform photo is 1/10 of the actual value (e.g. 0.2 V/cm should be 2.0 V/cm).
3. To measure the waveforms, first set this unit to the self-diagnostic mode (refer to page I-12, No. 4). The Wave ROM output will then be output as a sine wave to facilitate the servicing check.

## ■ Important safety notice:

Components identified by a ⚠ mark have special characteristics impotant for safety.
When replacing any of these components, use only manufacture's specified parts.

## ■ Symbolic Marks

The symbolic marks for resistors and capacitors which used in this circuits are classified as following TABLE-1 and TABLE-2.

1. RESISTORS
   - Resistors without symbolic mark are FIXED CARBON FILM RESISTORS (ERD-type).
   - All resistors are 1/4 WATT, ±5 % TOLERANCE unless otherwise designated in schematic diagrams.

(TABLE-1)

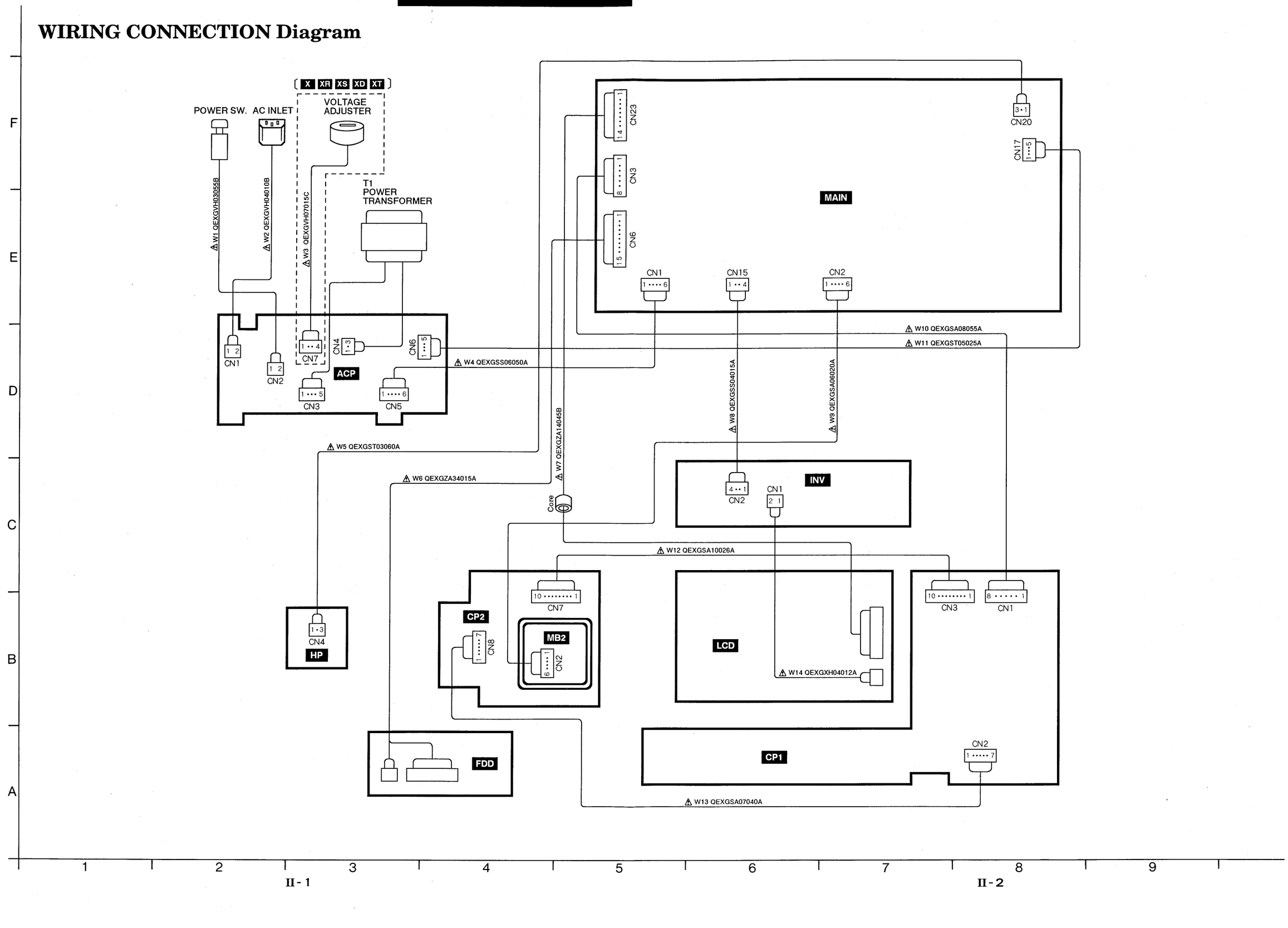
| SYMBOL | SPECIFICATION | SYMBOL | SPECIFICATION |
|---|---|---|---|
| Ⓕ | Fixed Carbon Film Resistors "FLAME-PROOF" (ERD—F—type) | Ⓕ | Fixed Metal Film Resistors "FLAME-PROOF" (ERX—type) |
| Ⓕ | Fixed Wire Wound Resistors "FLAME-PROOF" (ERF—type) | [F] | Fuse Type Fixed Metal Oxide Film Resistors "FLAME-PROOF" (ERQ—type) |
| Ⓕ | Fixed Metal Oxide Film Resistors "FLAME-PROOF" (ERG—type) | [F] | Fuse Type Fixed Carbon File Resistors "FLAME-PROOF" (ERD2FC—type) |
| Ⓖ | Fixed Metal Film Resistors (Precision and High Stability) (ERO—type) | | |

2. CAPACITORS
   - Capacitors without symbolic mark are POLYESTER CAPACITORS. (ECQM-type, ECQG-type, ±10 % Tolerance)
   - Polarized capacitors without symbolic mark are Aluminum Electrolytic Capapcitors. (ECEA-type, ±20 % Tolerance)

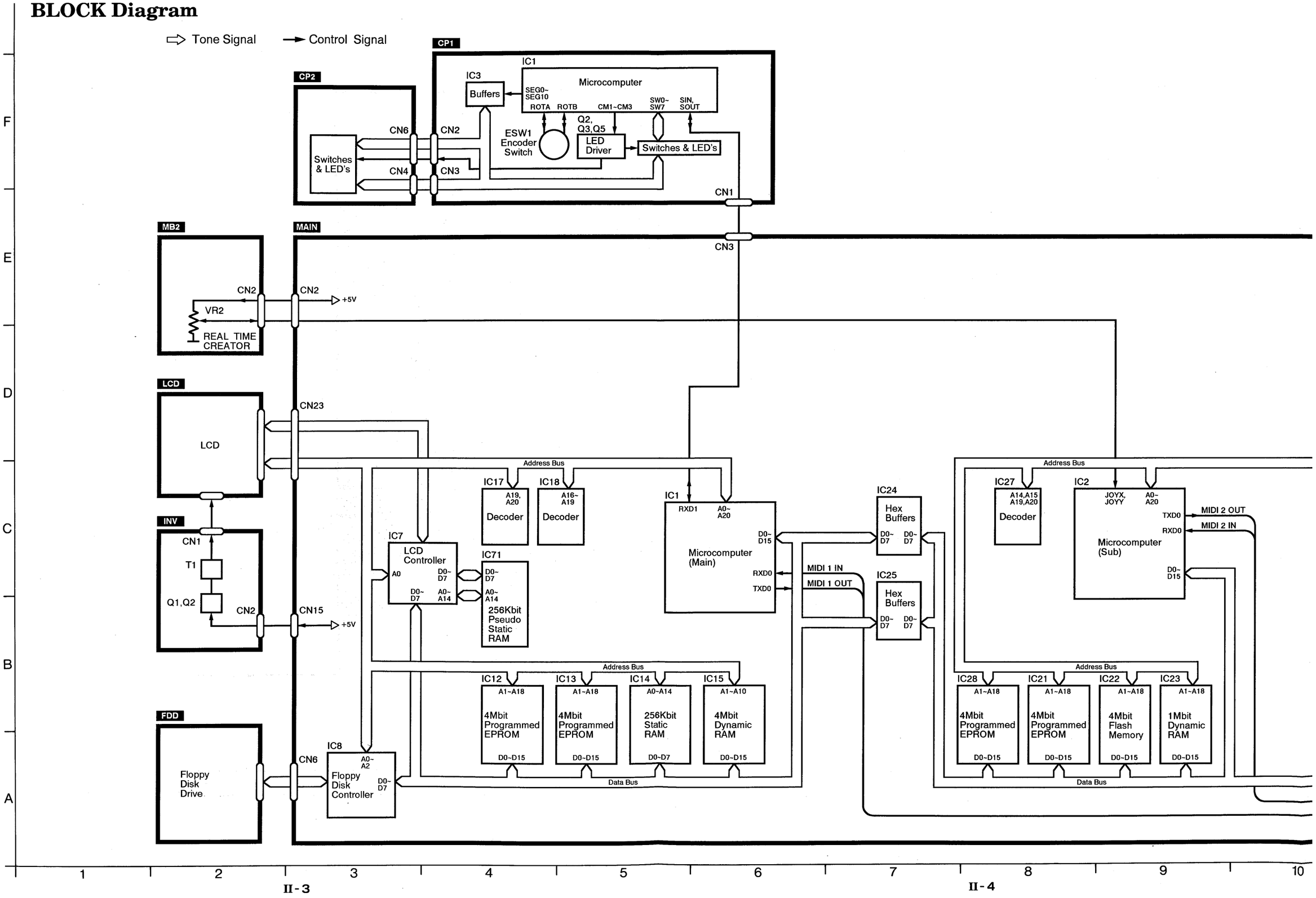
(TABLE-2)

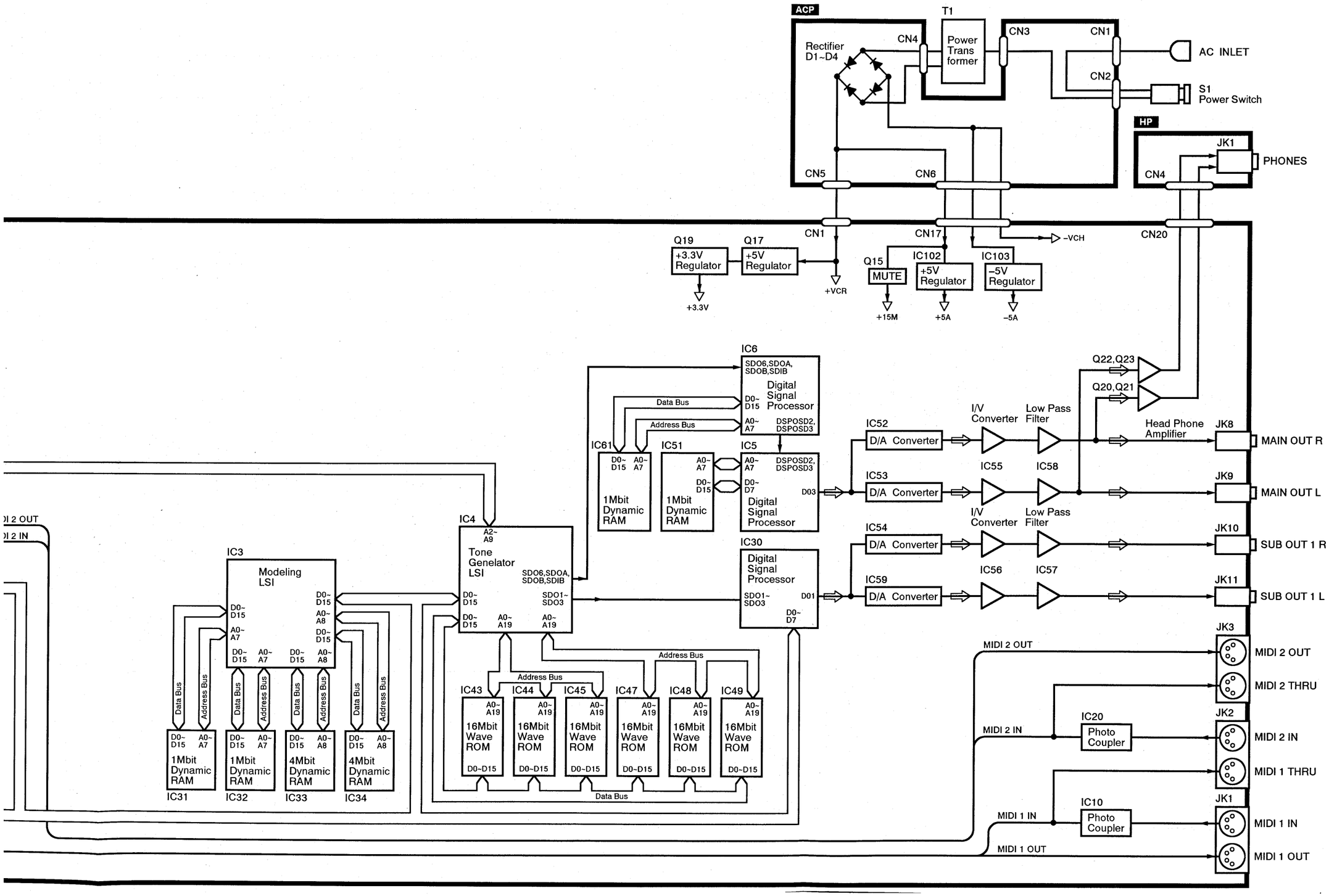
| SYMBOL | SPECIFICATION | TYPE |
|---|---|---|
| Ⓝ | Non-Polarized Electrolytic Capacitors | ECEA_KN_type |
| Ⓨ | Non-Polarized Electrolytic (for Network system) | ECEA_Y_type |
| Ⓣ | Tantalum Solid Electrolytic Capacitors | ECS_type |
| TF | Metalized Plastic Film Capacitors (TF Series) | ECQV_type |
| ○ | Temperature Compensating Ceramic Capacitors | ECC_type |
| | High-Dielectric Constant Ceramic Capacitors | ECK_type<br>ECR_type |
| | Axial Lead Ceramic Capacitors | ECB_type |
| | Metalized Polyester Film Capacitors for Across the Line | ECQ_EW_type |
| | Aluminum Electrolytic Capacitors for Smoothing Circuit | ECES_type |
| | Multilayer Ceramic Chip Capacitors | ECUV_type |

# WIRING CONNECTION Diagram

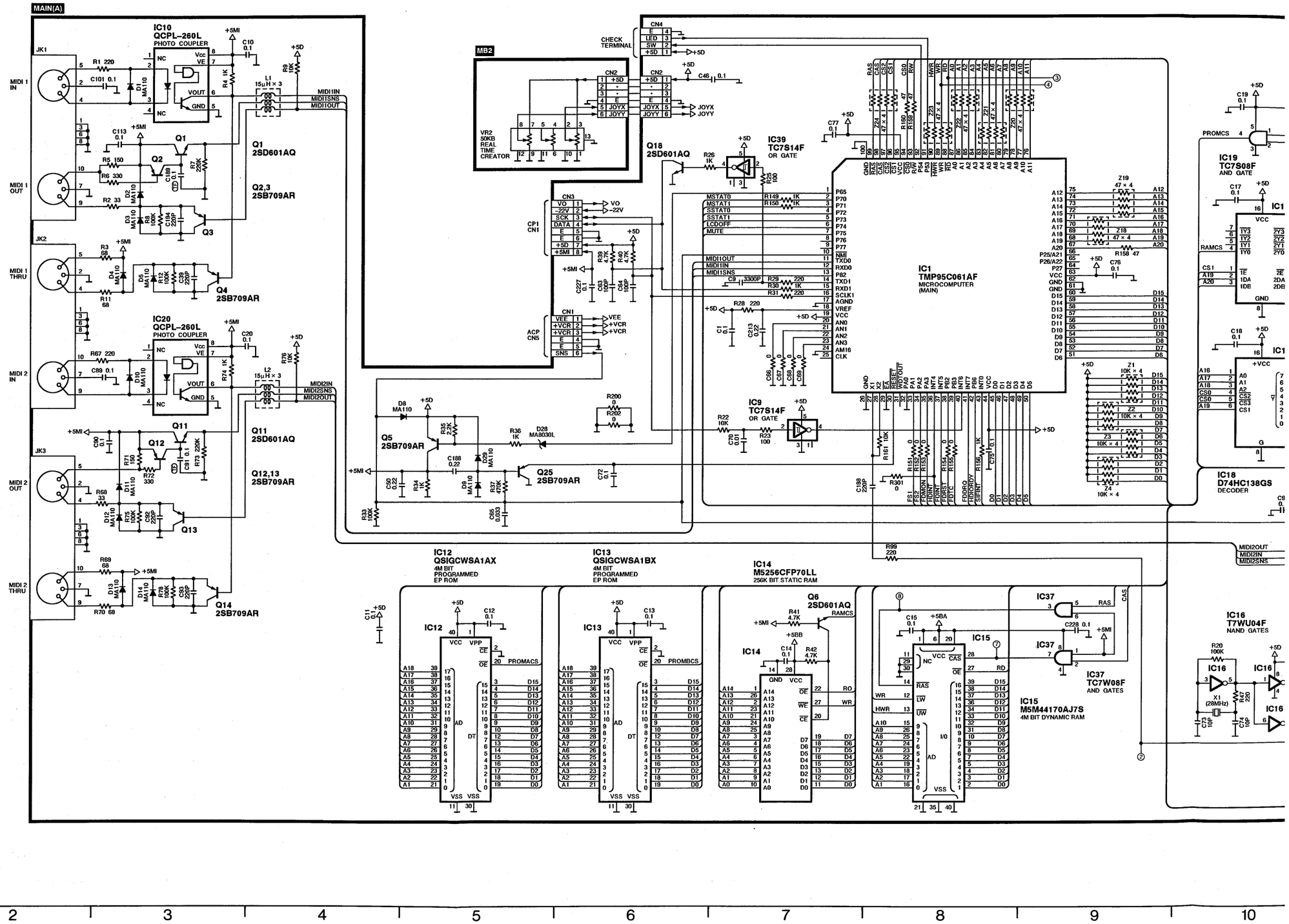


# BLOCK Diagram




ACP
T1
Rectifier
D1~D4
CN4
Power
Trans
former
CN3
CN1
CN2
AC INLET
S1
Power Switch
HP
JK1
PHONES
CN4
CN5
CN6
CN1
CN17
CN20
-VCH
Q19
+3.3V
Regulator
Q17
+5V
Regulator
+VCR
+3.3V
Q15
MUTE
IC102
+5V
Regulator
IC103
-5V
Regulator
+15M
+5A
-5A
IC6
SDO6,SDOA,
SDOB,SDIB
Digital
Signal
Processor
D0~
D15
A0~
A7
DSPOSD2,
DSPOSD3
Data Bus
Address Bus
IC61
1Mbit
Dynamic
RAM
IC51
1Mbit
Dynamic
RAM
IC5
Digital
Signal
Processor
D03
IC52
D/A Converter
I/V
Converter
Low Pass
Filter
IC55
IC58
IC53
D/A Converter
IC54
D/A Converter
IC56
IC57
IC59
D/A Converter
IC30
Digital
Signal
Processor
SDO1~
SDO3
D01
Q22,Q23
Q20,Q21
Head Phone
Amplifier
JK8
MAIN OUT R
JK9
MAIN OUT L
JK10
SUB OUT 1 R
JK11
SUB OUT 1 L
IC4
Tone
Genelator
LSI
A2~
A9
A0~
A19
IC3
Modeling
LSI
A0~
A8
IC31
1Mbit
Dynamic
RAM
IC32
1Mbit
Dynamic
RAM
IC33
4Mbit
Dynamic
RAM
IC34
4Mbit
Dynamic
RAM
IC43
IC44
IC45
IC47
IC48
IC49
16Mbit
Wave
ROM
D0~D15
JK3
MIDI 2 OUT
MIDI 2 THRU
JK2
MIDI 2 IN
MIDI 1 THRU
IC20
Photo
Coupler
IC10
JK1
MIDI 1 IN
MIDI 1 OUT
10
11
12
13
14
15
16
17
18
19

# MAIN (A)/MB2 P.C. Diagram



IC19
TC7S08F
AND GATE

IC17
D74HC139GS
DECODER

IC18
D74HC138GS
DECODER

IC16
T7WU04F
NAND GATES

IC24
D74HC374GS
HEX BUFFERS

IC26
D74HC32GS
OR GATE

IC25
D74HC374GS
HEX BUFFERS

IC2
TMP95C061AF
MICROCOMPUTER
(SUB)

IC71
LH5P832–N10
256KBIT PSEUDO
STATIC RAM

IC7
SED1330FBA
LCD CONTROLLER

IC8
D72070GF3BE
FLOPPY DISK
CONTROLLER

Q8
2SD601AQ

Q7
2SB709AR

Q10
2SB709AR

Q9
2SD601AQ

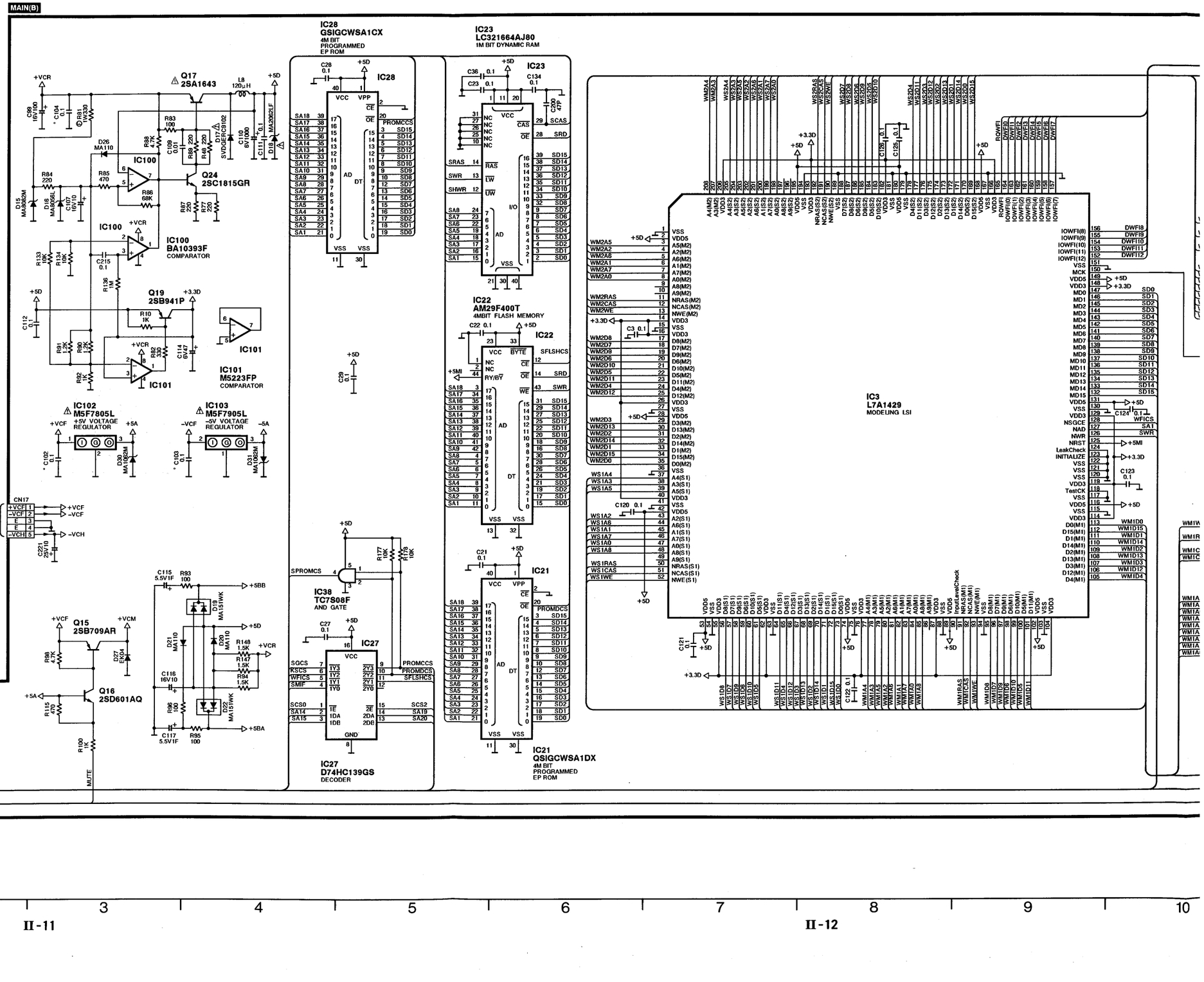
LCD

FDD

INV
CN2

# MAIN (B) P.C. Diagram

MAIN(B)



IC31
LC321664AJ80
1M BIT DYNAMIC RAM

IC32
LC321664AJ80
1M BIT DYNAMIC RAM

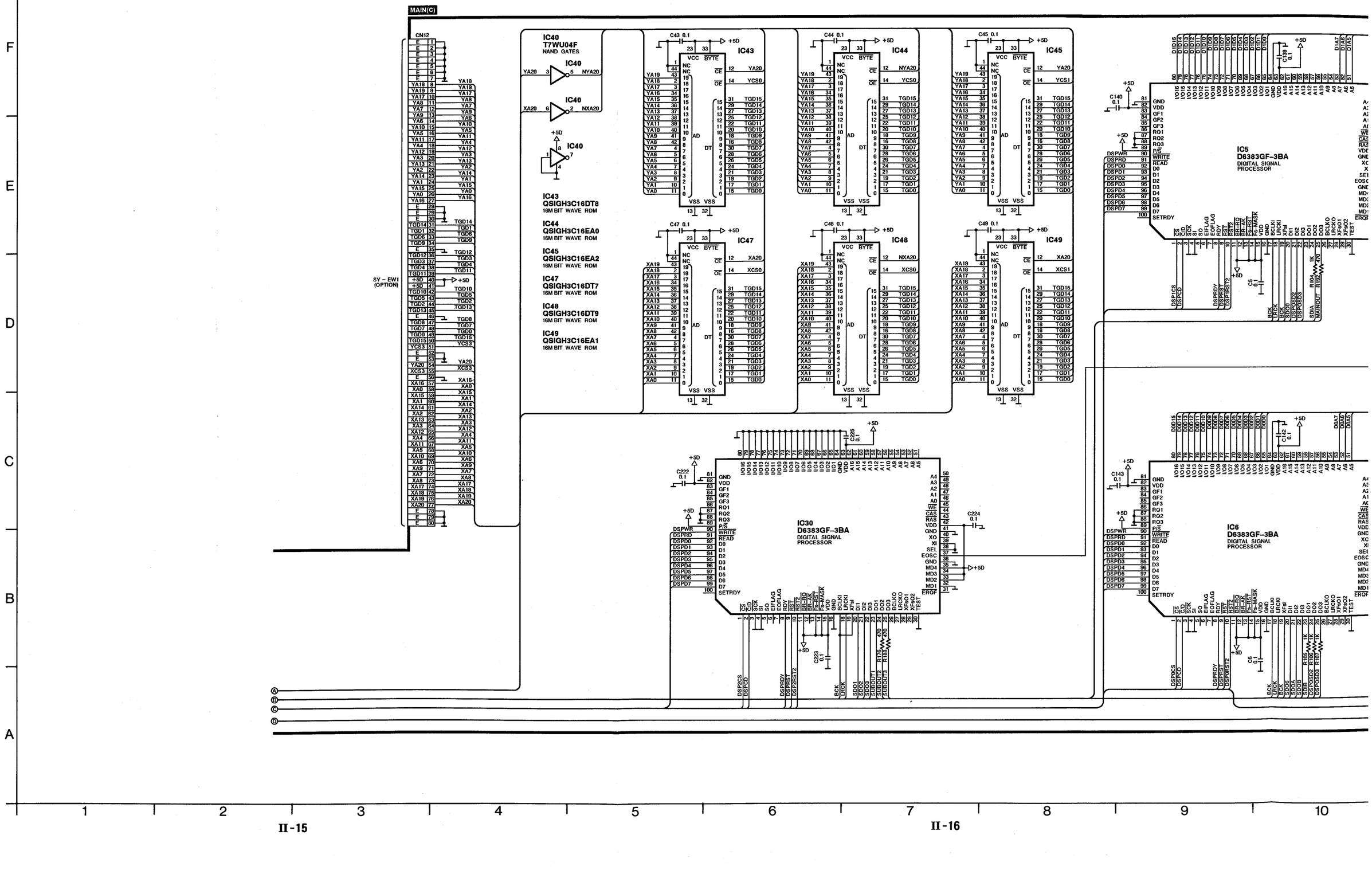
IC33,34
M5M44260AJ7S
4M BIT DYNAMIC RAM

IC33

IC34

IC4
TC183C230002
TONE GENELATOR LSI

# MAIN (C)/HP P.C. Diagram



IC61
LC321664AJ80
1M BIT
DYNAMIC RAM

IC60
T7WU04F
NAND GATES

IC51
LC321664AJ80
1M BIT
DYNAMIC RAM

IC52–54,59
PCM1702U
D–A CONVERTER

IC55,56
M5218AFP
I/V CONVERTER

IC57,58
M5218AFP
LOW PASS FILTER

Q20
2SD592ARS

Q21
2SB621ARS

Q22
2SD592ARS

Q23
2SB621ARS

SY – EW1
(OPTION)

SY – ES1
(OPTION)

SY – ES1
(OPTION)

PHONES

MAIN OUT R

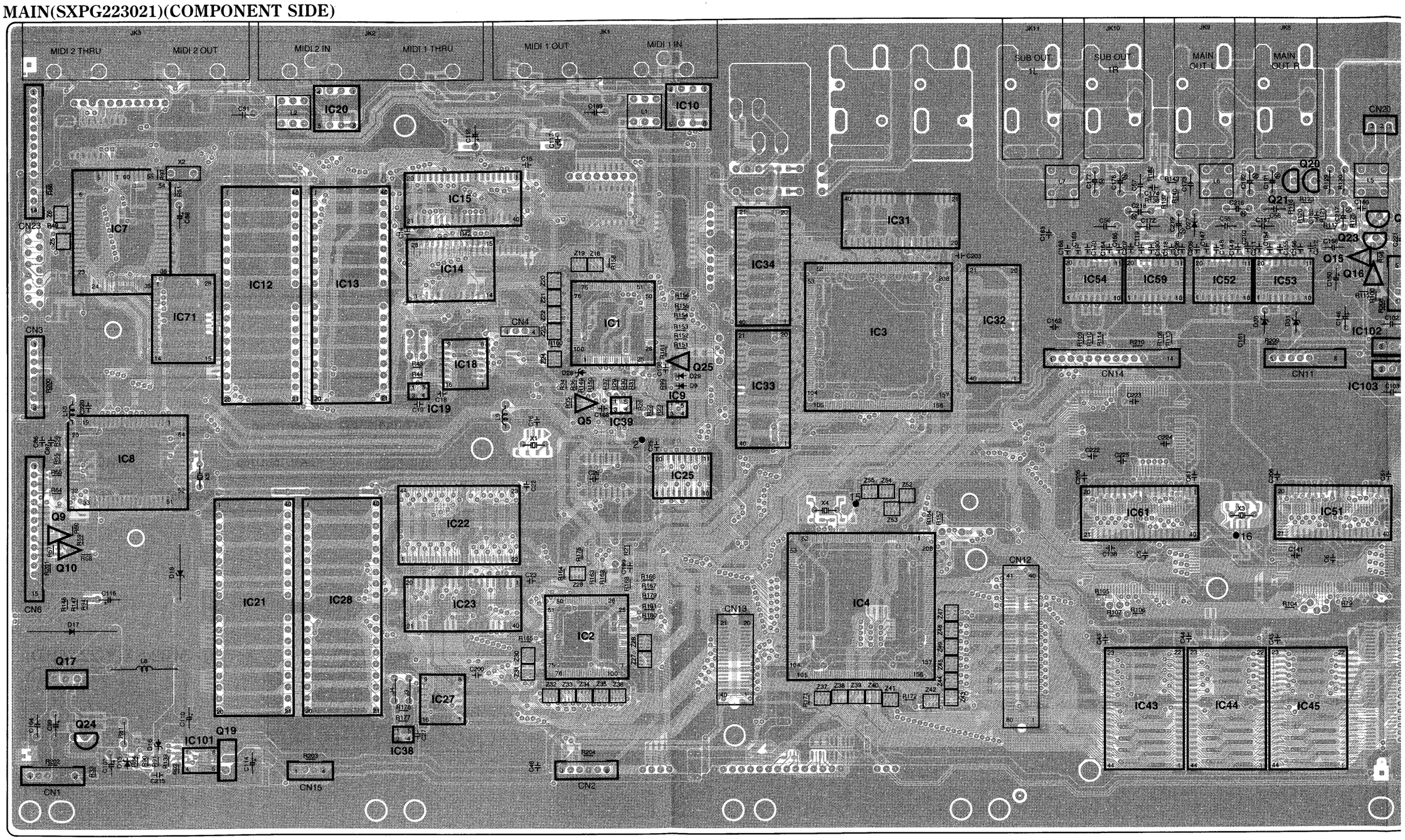
MAIN OUT L

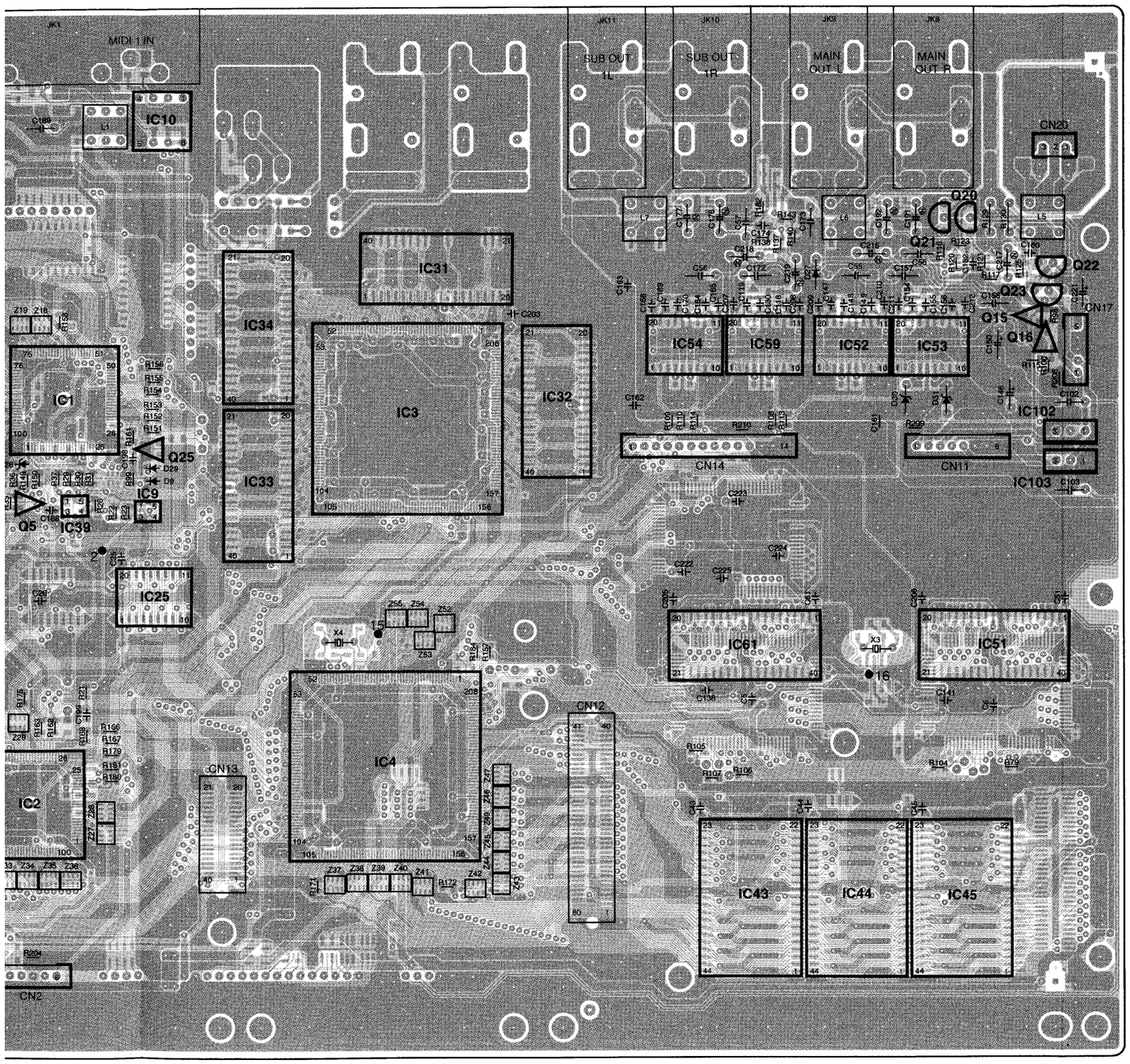
SUB OUT 1 R

SUB OUT 1 L

# MAIN (COMPONENT SIDE) P.C. Board

## MAIN(SXPG223021)(COMPONENT SIDE)



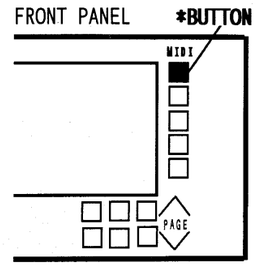




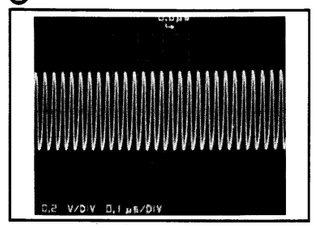

## Measuring Condition

Set to the self-diagnostic mode followings.

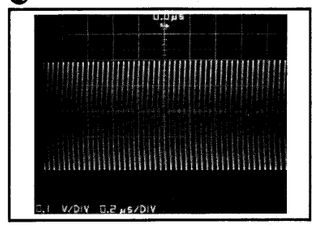
- While pressing No. 3 BUTTON simultaneously, turn on the power switch.
- Check mode .....(6) SINE WAVE & ROM CHECK 16dB DOWN.
- Volume .....MAX
- Press the ✱BUTTON.



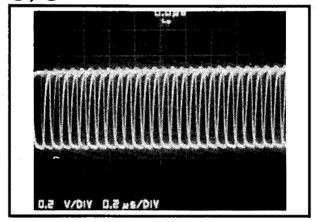

❷



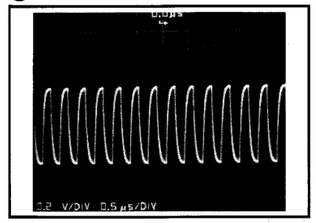

⓰



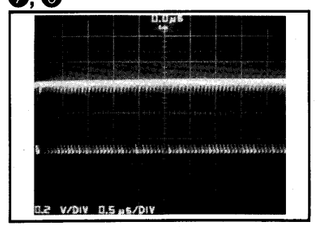

❸, ❹



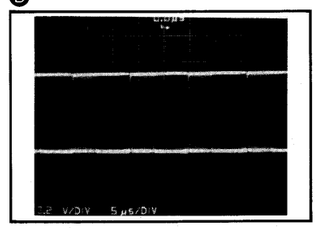

Ⓐ



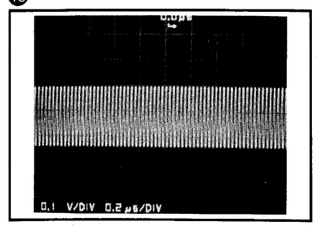

❼, ❽



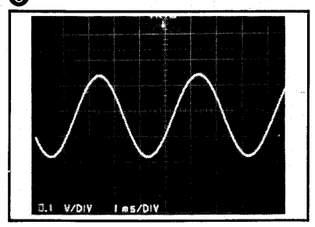

Ⓑ




⓯

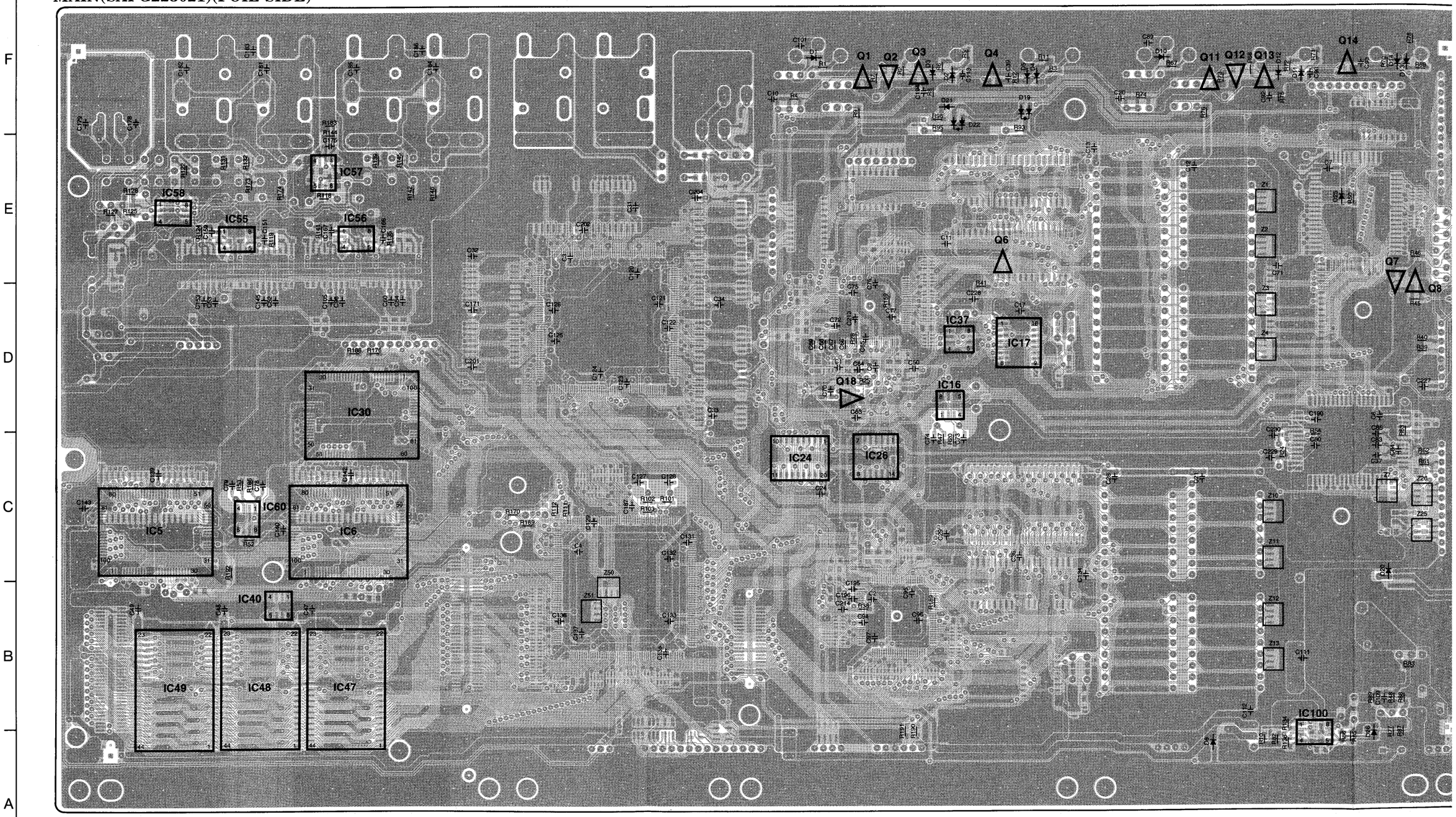



Ⓒ



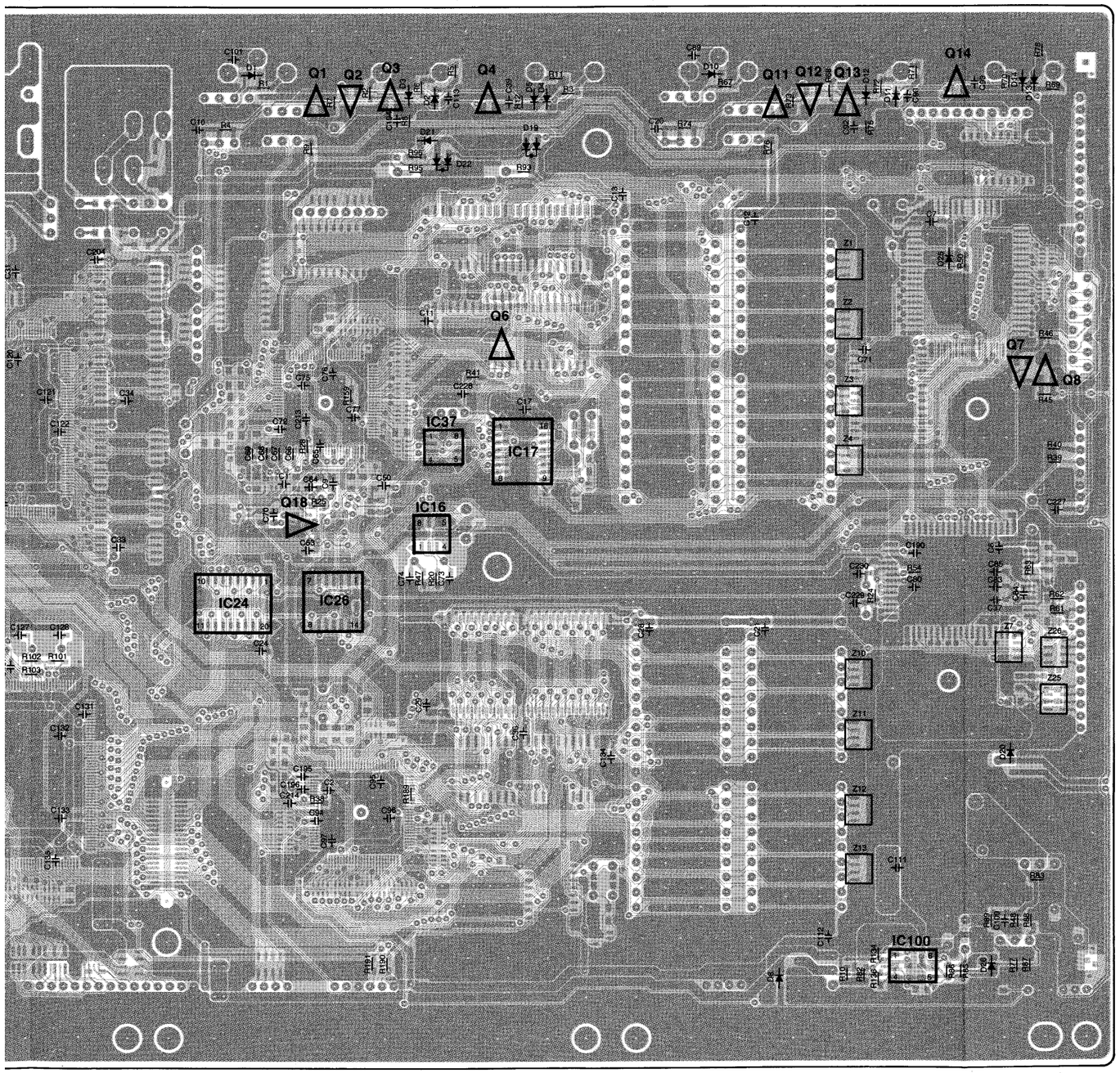
# MAIN (FOIL SIDE)/MB2/HP/ACP P.C. Board

## MAIN(SXPG223021)(FOIL SIDE)



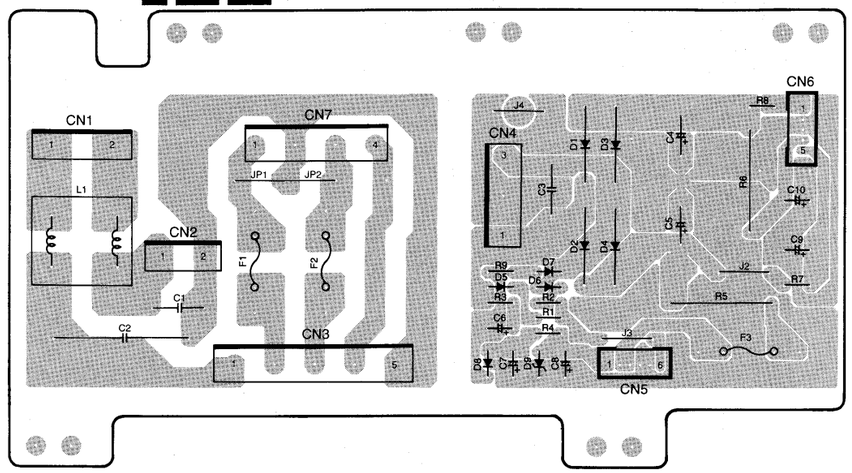

F E D C B A

1 2 3 4 5 6 7 8 9 10




ACP X XR XS XD XT (SXPG223281A)

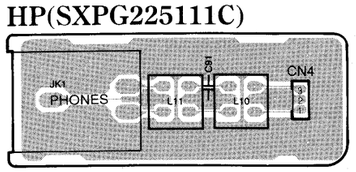
M MC XM (SXPG223271A) Others(SXPG223251A)



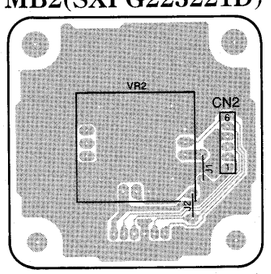

## ACP P.C. Board

| SXPG NO. | AREA | F1 | F2 | F3 | CN7 | JP1 | JP2 |
|---|---|---|---|---|---|---|---|
| 223241A | X XR XS XD XT | XBA2C10TB0 | XBA2C05TB0 | XBA2C20TB0 | ○ | × | × |
| 223231A | M MC XM | XBA1C16NU100 | × | XBA1C25NU100 | × | ○ | × |
| 223211A | Others | × | XBA2C05TB0 | XBA2C20TB0 | × | × | ○ |

HP(SXPG225111C)

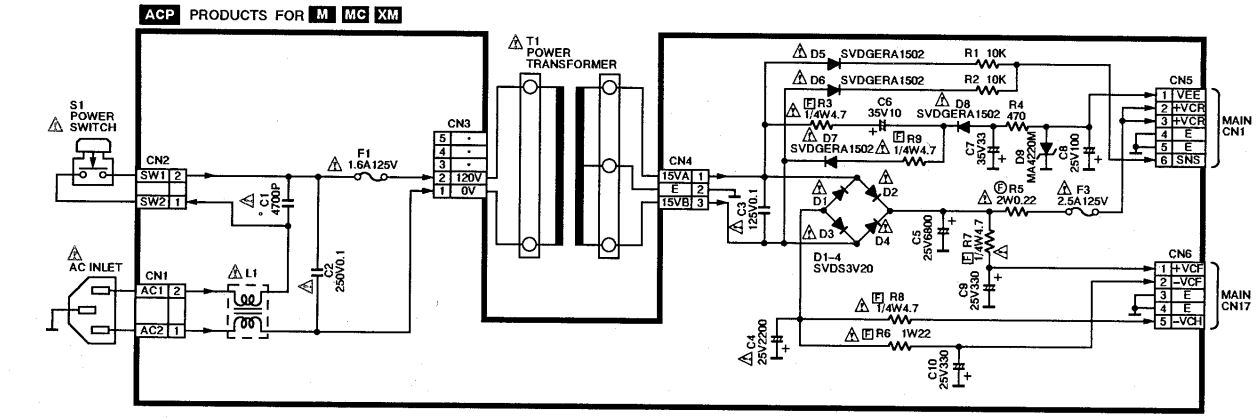


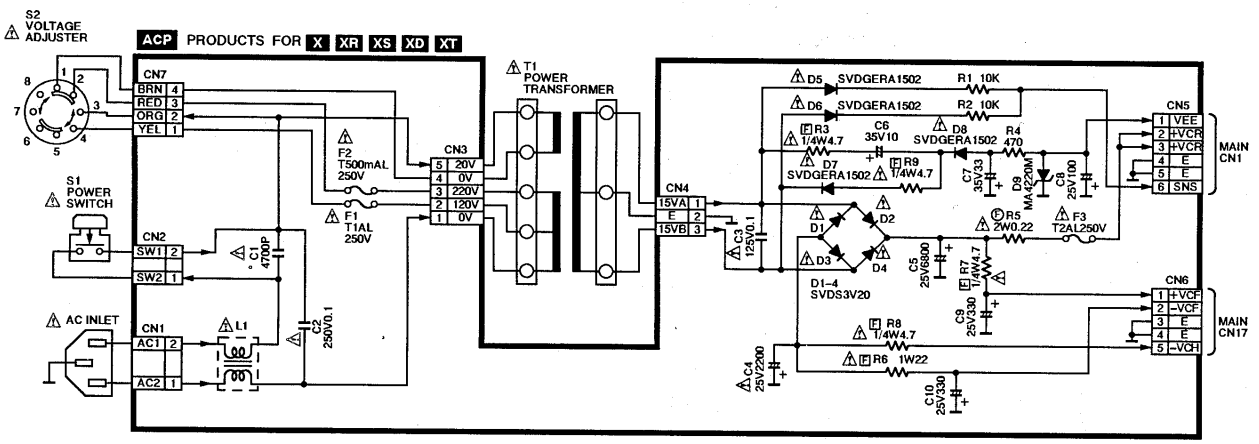

MB2(SXPG223221D)

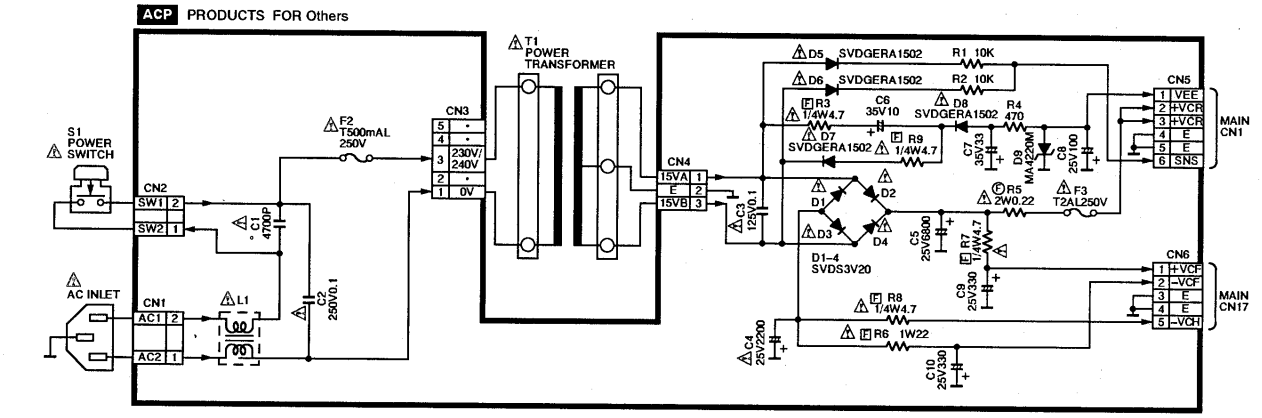



5 6 7 8 9 10 11 12 13 14

# ACP P.C. Diagram

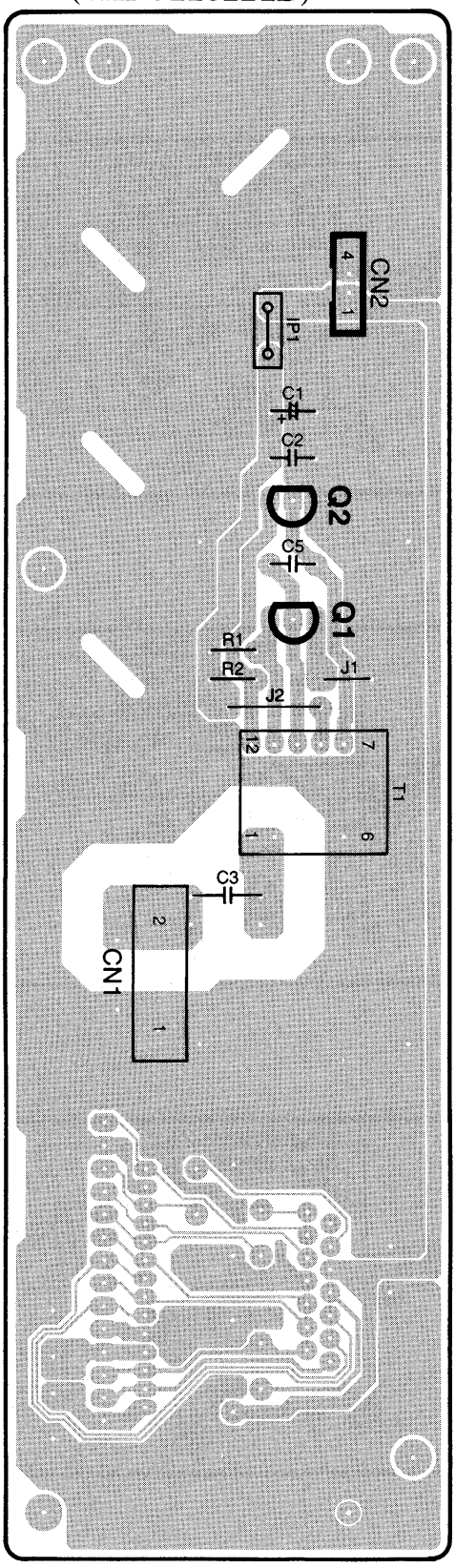


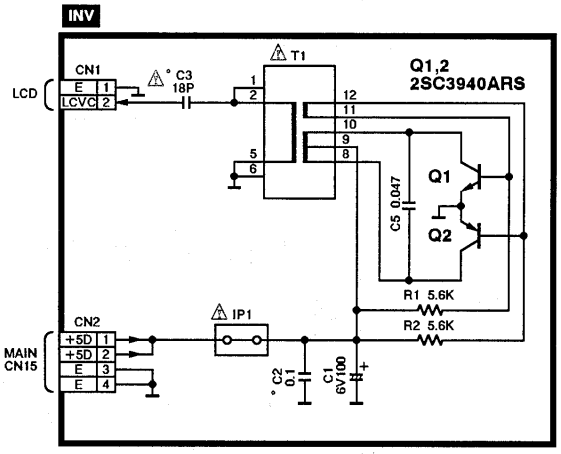



# INV

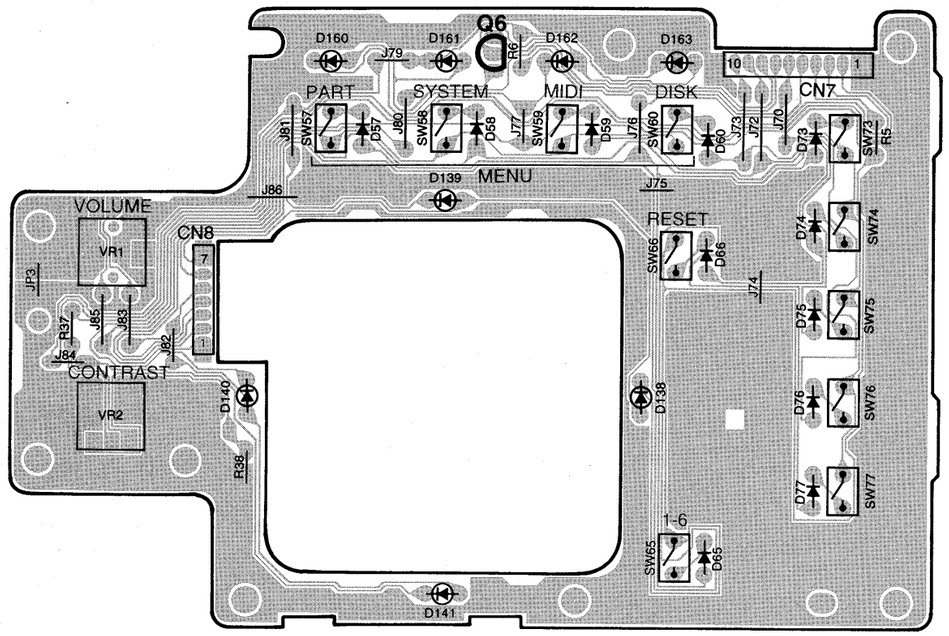
## INV(SXPG223221B)



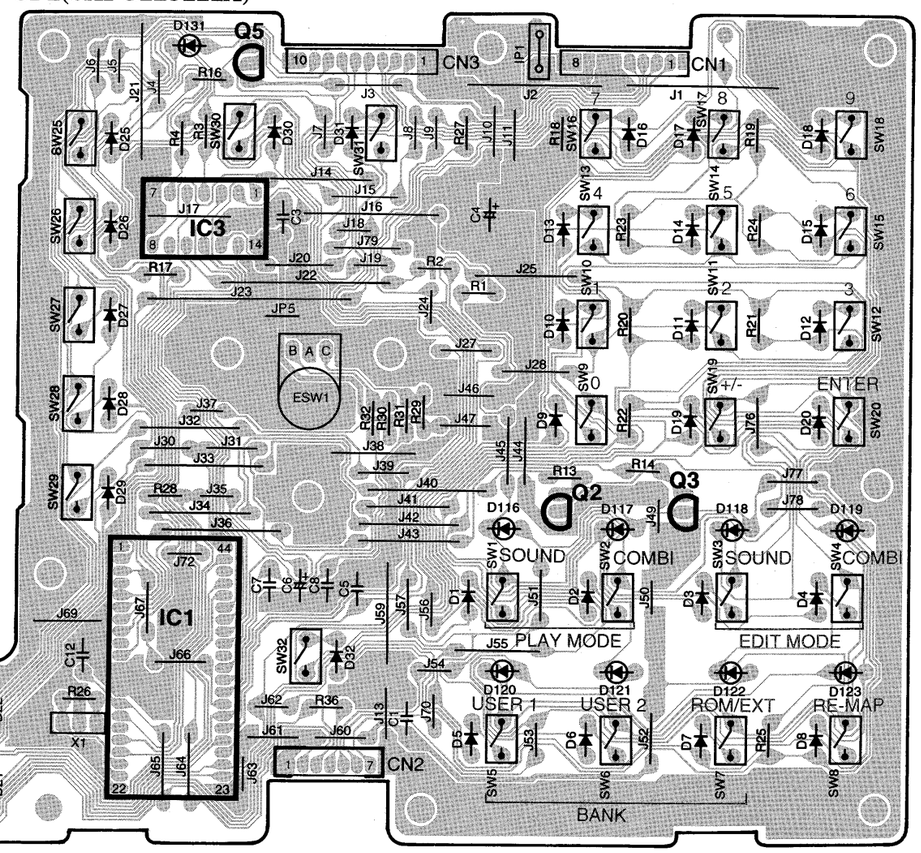



# CP1/CP2 P.C. Board

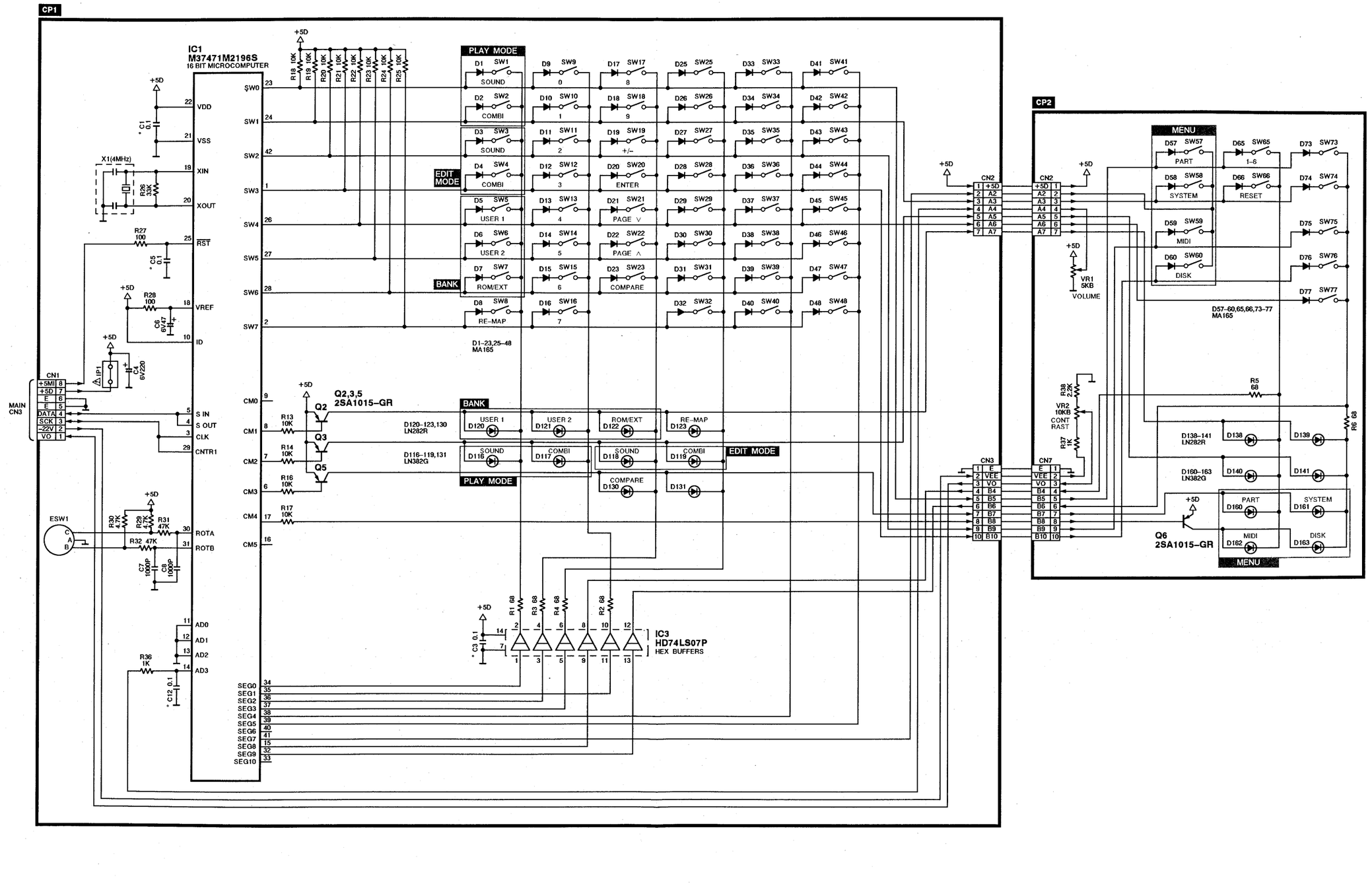
CP2(SXPG225111B)




CP1(SXPG225111A)



# CP1/CP2 P.C. Diagram



# REPLACEMENT PARTS LIST.....P.C.B. and Wiring Parts

**Notes:**

1. The marking (RTL) indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retension period of availability is dependant on the type of assembly, and in accordance with the laws governing part and product retention.
   After the end of this period, the assembly will no longer be available.
2. Important safety notice
   Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. The "S" mark is service standard parts and may differ from production parts.
4. ○ mark are new parts.
5. For part No. with area mark, check the area when placing an order.

## ■PRINTED CIRCUIT BOARD

| | RTL | Area | Part No. | Description | P/S |
|---|---|---|---|---|---|
| ○ | RTL | | SXPG223021 | MAIN | 1 |
| ○ | RTL | | SXPG225111C | HP | 1 |
| ○ | RTL | | SXPG223221D | MB2 | 1 |
| ○ | RTL | X XR XS XD XT | SXPG223281A | ACP | 1 |
| ○ | RTL | EN EK EZ EW EF EA EH EP XL XP | SXPG223251A | ACP | 1 |
| ○ | RTL | M MC XM | SXPG223271A | ACP | 1 |
| ○ | RTL | | SXPG223221B | INV | 1 |
| ○ | RTL | | SXPG225111A | CP1 | 1 |
| ○ | RTL | | SXPG225111B | CP2 | 1 |
| ○ | | | QSLG018AA | LCD | 1 |

## MAIN MAIN CIRCUIT

| Ref. No. | Part No. | Description | P/S |
|---|---|---|---|
| | **INTEGRATED CIRCUITS** | | |
| IC1, 2 | TMP95C061AF | IC, MICROCONTROLER, 16BIT | 2 |
| IC3 | L7A1429 | IC, LSI | 1 |
| IC4 | TC183C230002 | IC, MICROCONTROLER, 8BIT | 1 |
| IC5, 6 | D6383GF-3BA | IC, MICROCONTROLER, 16BIT | 2 |
| IC7 | SED1330FBA | LCD CONTROLLER | 1 |
| IC8 | D72070GF3BE | IC, MICROCONTROLER, 8BIT | 1 |
| IC9 | TC7S14F | OR GATE | 1 |
| IC10 | QCPL-260L | PHOTO COUPLER | 1 |
| IC12 | QSIGCWSA1AX | IC, 4M EPROM | 1 |
| IC12-1 | (M27C400210F1 | (BLANK ROM) | 1 |
| IC13 | QSIGCWSA1BX | IC, 4M EPROM | 1 |
| IC13-1 | (M27C400210F1 | (BLANK ROM) | 1 |
| IC14 | M5256CFP70LL | IC, S RAM | 1 |
| IC15 | M5M44170AJ7S | IC, D RAM 4M BIT | 1 |
| IC16 | T7WU04F | IC, CMOS LOGIC | 1 |
| IC17 | D74HC139GS | IC, CMOS LOGIC | 1 |
| IC18 | D74HC138GS | IC, CMOS LOGIC | 1 |
| IC19 | TC7S08F | IC, CMOS LOGIC | 1 |
| IC20 | QCPL-260L | PHOTO COUPLER | 1 |
| IC21 | QSIGCWSA1DX | IC, 4M EPROM | 1 |
| IC21-1 | (M27C400210F1 | (BLANK ROM) | 1 |
| IC22 | AM29F400T | IC, FLASH MEMORY 4M BIT | 1 |
| IC23 | LC321664AJ80 | 1M BIT DYNAMIC RAM | 1 |
| IC24, 25 | D74HC374GS | IC, CMOS LOGIC | 2 |
| IC26 | D74HC32GS | QUAD 2 INPUT OR GATE | 1 |
| IC27 | D74HC139GS | IC, CMOS LOGIC | 1 |
| IC28 | QSIGCWSA1CX | IC, 4M EPROM | 1 |
| IC28-1 | (M27C400210F1 | (BLANK ROM) | 1 |
| IC30 | D6383GF-3BA | IC, MICROCONTROLER, 16BIT | 1 |
| IC31, 32 | LC321664AJ80 | 1M BIT DYNAMIC RAM | 2 |
| IC33, 34 | M5M44260AJ7S | IC, D RAM 4M BIT | 2 |
| IC37 | TC7W08F | DUAL 2-INPUT AND GATES | 1 |
| IC38 | TC7S08F | IC, CMOS LOGIC | 1 |
| IC39 | TC7S14F | OR GATE | 1 |
| IC40 | T7WU04F | IC, CMOS LOGIC | 1 |
| IC43 | QSIGH3C16DT8 | IC, MASK ROM 16M BIT | 1 |
| IC44 | QSIGH3C16EA0 | IC, MASK ROM 16M BIT | 1 |
| IC45 | QSIGH3C16EA2 | IC, MASK ROM 16M BIT | 1 |
| IC47 | QSIGH3C16DT7 | IC, MASK ROM 16M BIT | 1 |
| IC48 | QSIGH3C16DT9 | IC, MASK ROM 16M BIT | 1 |
| IC49 | QSIGH3C16EA1 | IC, MASK ROM 16M BIT | 1 |
| IC51 | LC321664AJ80 | 1M BIT DYNAMIC RAM | 1 |
| IC52~54 | PCM1702U | D-A CONVERTER | 3 |
| IC55~58 | M5218AFP | OPERATIONAL AMPLIFIER | 4 |
| IC59 | PCM1702U | D-A CONVERTER | 1 |
| IC60 | T7WU04F | IC, CMOS LOGIC | 1 |
| IC61 | LC321664AJ80 | 1M BIT DYNAMIC RAM | 1 |
| IC71 | LH5P832N-10 | 256K BIT STATIC RAM | 1 |
| IC100 | BA10393F | COMPARATOR | 1 |
| IC101 | M5223FPEI | IC, LINER | 1 |
| IC102 ⚠ | M5F7805L | VOLTAGTE REGULATOR | 1 |
| IC103 ⚠ | M5F7905L | −5V VOLTAGE REGULATOR | 1 |
| | **TRANSISTORS** | | |
| Q1 | 2SD601AQ | TRANSISTOR | 1 |
| Q2~5 | 2SB709AR | TRANSISTOR | 4 |
| Q6 | 2SD601AQ | TRANSISTOR | 1 |
| Q7 | 2SB709AR | TRANSISTOR | 1 |
| Q8, 9 | 2SD601AQ | TRANSISTOR | 2 |
| Q10 | 2SB709AR | TRANSISTOR | 1 |
| Q11 | 2SD601AQ | TRANSISTOR | 1 |
| Q12~15 | 2SB709AR | TRANSISTOR | 4 |
| Q16 | 2SD601AQ | TRANSISTOR | 1 |
| Q17 ⚠ | 2SA1643 | TRANSISTOR | 1 |
| Q18 | 2SD601AQ | TRANSISTOR | 1 |
| Q19 | 2SB941P | TRANSISTOR | 1 |
| Q20 | 2SD592ARS | TRANSISTOR | 1 |
| Q21 | 2SB621ARS | TRANSISTOR | 1 |
| Q22 | 2SD592ARS | TRANSISTOR | 1 |
| Q23 | 2SB621ARS | TRANSISTOR | 1 |
| S Q24 | 2SC1815GR | TRANSISTOR | 1 |
| Q25 | 2SB709AR | TRANSISTOR | 1 |

| Ref. No. | Part No. | Description | P/S |
|---|---|---|---|
| **DIODES** | | | |
| D1~5, 8~14 | MA110 | DIODE | 12 |
| D15 | MA8082M | DIODE, SI | 1 |
| D16 | MA8056L | DIODE, SI | 1 |
| ⚠ D17 | SVDGERC9102 | DIODE | 1 |
| ⚠ D18 | MA2062LF | ZENER, 6.2V | 1 |
| D19 | MA151WK | DIODE | 1 |
| D20, 21 | MA110 | DIODE | 2 |
| D22 | MA151WK | DIODE | 1 |
| D25, 26 | MA110 | DIODE | 2 |
| D27 | EK04 | DIODE | 1 |
| D28 | MA8030L | ZENER, 3.1V | 1 |
| D29 | MA110 | DIODE | 1 |
| D30, 31 | MA1062M | ZENER, 6.2V | 2 |
| **OSCILLATORS** | | | |
| X1 | QSXG2F2800A | CERAMIC OSCILLATOR | 1 |
| X2 | EF0EC8004A5 | 8MHz, CERAMIC OSCILLATOR | 1 |
| X3 | QSXG1A2500A | 25MHz, QUARTZ OSCILLATOR | 1 |
| X4 | QSXG1I3386A | CRYSTAL OSCILLATOR | 1 |
| X5 | QSXG2F2400A | CERAMIC OSCILLATOR | 1 |
| **COMPONENT COMBINATIONS** | | | |
| Z1~4 | EXBS8V103J | 10KΩ×4 | 4 |
| Z5 | EXBV8V221J | 220Ω×4 | 1 |
| Z6 | EXBV8V471J | 470Ω×4 | 1 |
| Z7 | EXBS8V102J | 1KΩ×4 | 1 |
| Z10~13 | EXBS8V103J | 10KΩ×4 | 4 |
| Z18~24 | EXBV8V470J | 47Ω×4 | 7 |
| Z25, 26 | EXBS8V470J | 47Ω×4 | 2 |
| Z27~29 | EXBV8V102J | 1KΩ×4 | 3 |
| Z30~36 | EXBV8V470J | 47Ω×4 | 7 |
| Z37~47, 49 | EXBV8V471J | 470Ω×4 | 12 |
| Z50, 51 | EXBS8V103J | 10KΩ×4 | 2 |
| Z52~55 | EXBV8V221J | 220Ω×4 | 4 |
| **COILS** | | | |
| L1, 2, 5~7 | QLQGT3T150SA | 15μH×3 | 5 |
| L8 | SLCG3A121T | 120μH | 1 |
| L9 | QLBG002A | 0.45μH | 1 |
| L10 | QLQGT1B800MA | 80μH | 1 |
| **JACKS** | | | |
| JK1~3 | QJJG005AA | JACK SOCKET | 3 |
| JK8~11 | QJJG003AA | JACK | 4 |
| **RESISTORS** | | | |
| R1 | ERJ6GEYJ221V | 220Ω | 1 |
| R2 | ERJ6GEYJ330V | 33Ω | 1 |
| R3 | ERJ6GEYJ680V | 68Ω | 1 |
| R4 | ERJ6GEYJ102V | 1KΩ | 1 |
| R5 | ERJ6GEYJ151V | 150Ω | 1 |
| R6 | ERJ6GEYJ331V | 330Ω | 1 |
| R7 | ERJ6GEYJ224V | 220KΩ | 1 |
| R8 | ERJ6GEYJ104V | 100KΩ | 1 |
| R9 | ERJ6GEYJ103V | 10KΩ | 1 |
| R10 | ERJ6GEYJ102V | 1KΩ | 1 |
| R11 | ERJ6GEYJ680V | 68Ω | 1 |
| R12, 20 | ERJ6GEYJ104V | 100KΩ | 2 |
| R21 | ERJ6GEYJ221V | 220Ω | 1 |
| R22 | ERJ6GEYJ103V | 10KΩ | 1 |
| R23~25 | ERJ6GEYJ101V | 100Ω | 3 |

| Ref. No. | Part No. | Description | P/S |
|---|---|---|---|
| R26 | ERJ6GEYJ102V | 1KΩ | 1 |
| R28, 29 | ERJ6GEYJ221V | 220Ω | 2 |
| R30 | ERJ6GEYJ102V | 1KΩ | 1 |
| R31 | ERJ6GEYJ221V | 220Ω | 1 |
| R33 | ERJ6GEYJ104V | 100KΩ | 1 |
| R34 | ERJ6GEYJ102V | 1KΩ | 1 |
| R35 | ERJ6GEYJ222V | 2.2KΩ | 1 |
| R36 | ERJ6GEYJ102V | 1KΩ | 1 |
| R37 | ERJ6GEYJ474V | 470KΩ | 1 |
| R38 | ERJ6GEYJ221V | 220Ω | 1 |
| R39~42 | ERJ6GEYJ472V | 4.7KΩ | 4 |
| R43, 44 | ERJ6GEYJ103V | 10KΩ | 2 |
| R45, 46 | ERJ6GEYJ472V | 4.7KΩ | 2 |
| R47~49 | ERJ6GEYJ221V | 220Ω | 3 |
| R50 | ERJ6GEYJ333V | 33KΩ | 1 |
| R51 | ERJ6GEYJ473V | 47KΩ | 1 |
| R52 | ERJ6GEYJ221V | 220Ω | 1 |
| R53 | ERJ6GEYJ104V | 100KΩ | 1 |
| R54 | ERJ6GEYJ103V | 10KΩ | 1 |
| R55 | ERJ6GEYJ682V | 6.8KΩ | 1 |
| R56 | ERJ6GEYJ102V | 1KΩ | 1 |
| R57~61 | ERJ6GEYJ103V | 10KΩ | 5 |
| R62 | ERJ6GEYJ102V | 1KΩ | 1 |
| R63 | ERJ6GEYJ151V | 150Ω | 1 |
| R64~66 | ERJ6GEY0R00V | 0Ω | 3 |
| R67 | ERJ6GEYJ221V | 220Ω | 1 |
| R68 | ERJ6GEYJ330V | 33Ω | 1 |
| R69, 70 | ERJ6GEYJ680V | 68Ω | 2 |
| R71 | ERJ6GEYJ151V | 150Ω | 1 |
| R72 | ERJ6GEYJ331V | 330Ω | 1 |
| R73 | ERJ6GEYJ224V | 220KΩ | 1 |
| R74 | ERJ6GEYJ102V | 1KΩ | 1 |
| R75 | ERJ6GEYJ104V | 100KΩ | 1 |
| R76 | ERJ6GEYJ103V | 10KΩ | 1 |
| R77 | ERJ6GEYJ221V | 220Ω | 1 |
| R78 | ERJ6GEYJ104V | 100KΩ | 1 |
| R79 | ERJ6GEYJ472V | 4.7KΩ | 1 |
| R81 | ERG1SJ331 | 330Ω, 1W, FLAME TYPE | 1 |
| R82 | ERJ6GEYJ331V | 330Ω | 1 |
| R83 | ERJ6GEYJ101V | 100Ω | 1 |
| R84 | ERJ6GEYJ221V | 220Ω | 1 |
| R85 | ERJ6GEYJ471V | 470Ω | 1 |
| R86 | ERJ6GEYJ683V | 68KΩ | 1 |
| R87 | ERJ6GEYJ221V | 220Ω | 1 |
| R88 | ERJ6GEYJ472V | 4.7KΩ | 1 |
| R89 | ERJ6GEYJ221V | 220Ω | 1 |
| R90, 91 | ERJ6GEYJ122V | THICK FILM CHIP RESISTOR, 1/10W | 2 |
| R92 | ERJ6GEYF102V | THICK FILM CHIP RESISTOR, 1/10W | 1 |
| R93 | ERJ6GEYJ101V | 100Ω | 1 |
| R94 | ERJ6GEYJ152V | 1.5KΩ | 1 |
| R95~97 | ERJ6GEYJ101V | 100Ω | 3 |
| R98 | ERJ6GEYJ472V | 4.7KΩ | 1 |
| R99 | ERJ6GEYJ221V | 220Ω | 1 |
| R100 | ERJ6GEYJ102V | 1KΩ | 1 |
| R101 | ERJ6GEYJ104V | 100KΩ | 1 |
| R102 | ERJ6GEYJ101V | 100Ω | 1 |
| R103 | ERJ6GEYJ221V | 220Ω | 1 |
| R104~107 | ERJ6GEYJ102V | 1KΩ | 4 |
| R108~110 | ERJ6GEYJ221V | 220Ω | 3 |
| R111 | ERJ6GEYJ101V | 100Ω | 1 |
| R112 | ERJ6GEYJ471V | 470Ω | 1 |
| R113 | ERJ6GEYJ221V | 220Ω | 1 |
| R114, 115 | ERJ6GEYJ471V | 470Ω | 2 |
| R116~118 | ERJ6GEYJ103V | 10KΩ | 3 |
| R119 | ERJ6GEYJ682V | 6.8KΩ | 1 |
| R120 | ERJ6GEYJ104V | 100KΩ | 1 |
| R121 | ERJ6GEYJ124V | 120KΩ | 1 |
| R122 | ERJ6GEYJ330V | 33Ω | 1 |

| Ref. No. | Part No. | Description | P/S |
|---|---|---|---|
| R123 | ERJ6GEYJ102V | 1KΩ | 1 |
| R124 | ERJ6GEYJ682V | 6.8KΩ | 1 |
| R125 | ERJ6GEYJ104V | 100KΩ | 1 |
| R126 | ERJ6GEYJ124V | 120KΩ | 1 |
| R127 | ERJ6GEYJ330V | 33Ω | 1 |
| R128 | ERJ6GEYJ102V | 1KΩ | 1 |
| R129, 130 ⚠ | ERG1SJ330 | 33Ω, 1W | 2 |
| R131, 132 | ERJ6GEYJ681V | 680Ω | 2 |
| R133, 134 | ERJ6GEYJ103V | 10KΩ | 2 |
| R135 | ERJ6GEYJ682V | 6.8KΩ | 1 |
| R136 | ERJ6GEYJ105V | 1MΩ | 1 |
| R137 | ERJ6GEYJ104V | 100KΩ | 1 |
| R138 | ERJ6GEYJ124V | 120KΩ | 1 |
| R139 | ERJ6GEYJ681V | 680Ω | 1 |
| R140 | ERJ6GEYJ103V | 10KΩ | 1 |
| R141 | ERJ6GEYJ682V | 6.8KΩ | 1 |
| R142, 143 | ERJ6GEYJ104V | 100KΩ | 2 |
| R144 | ERJ6GEYJ124V | 120KΩ | 1 |
| R145 | ERJ6GEYJ681V | 680Ω | 1 |
| R146 | ERJ6GEYJ104V | 100KΩ | 1 |
| R147, 148 | ERJ6GEYJ152V | 1.5KΩ | 2 |
| R149, 150 | ERJ6GEYJ102V | 1KΩ | 2 |
| R151~155 | ERJ6GEY0R00V | 0Ω | 5 |
| R156 | ERJ6GEYJ102V | 1KΩ | 1 |
| R157 | ERJ6GEYJ471V | 470Ω | 1 |
| R158~160 | ERJ6GEYJ470V | 47Ω | 3 |
| R161 | ERJ6GEYJ103V | 10KΩ | 1 |
| R162~164 | ERJ6GEYJ102V | 1KΩ | 3 |
| R165 | ERJ6GEYJ470V | 47Ω | 1 |
| R166, 167 | ERJ6GEYJ102V | 1KΩ | 2 |
| R168 | ERJ6GEYJ103V | 10KΩ | 1 |
| R169, 170 | ERJ6GEYJ102V | 1KΩ | 2 |
| R171, 172 | ERJ6GEYJ471V | 470Ω | 2 |
| R173, 174 | ERJ6GEYJ104V | 100KΩ | 2 |
| R175 | ERJ6GEYJ102V | 1KΩ | 1 |
| R176 | ERJ6GEYJ471V | 470Ω | 1 |
| R177, 178 | ERJ6GEYJ103V | 10KΩ | 2 |
| R179~183 | ERJ6GEYJ102V | 1KΩ | 5 |
| R184 | ERJ6GEYJ471V | 470Ω | 1 |
| R186 | ERJ6GEYJ221V | 220Ω | 1 |
| R188 | ERJ6GEYJ471V | 470Ω | 1 |
| R189 | ERJ6GEYJ102V | 1KΩ | 1 |
| R190, 191 | ERJ6GEYJ221V | 220Ω | 2 |
| R192 | ERJ6GEYJ471V | 470Ω | 1 |
| R200~204, 208~210, 301 | ERJ6GEY0R00V | 0Ω | 9 |

## CAPACITORS

| | | | |
|---|---|---|---|
| C1~8 | ECUV1H104ZFX | 0.1μF | 8 |
| C9 | ECUV1H332KB | 0.0033μF | 1 |
| C10~29, 31~34, 36 | ECUV1H104ZFX | 0.1μF | 25 |
| C37 | ECUV1H333KBX | 0.033μF | 1 |
| C39 | ECUV1H221JG | 220pF | 1 |
| C43~49 | ECUV1H104ZFX | 0.1μF | 7 |
| C50 | ECUV1E224ZFX | 0.22μF | 1 |
| C51~54 | ECUV1H104ZFX | 0.1μF | 4 |
| C55, 56 | ECRF1H104ZF | 0.1μF | 2 |
| C57 | ECQV1H104JM | 0.1μF | 1 |
| C58 | ECRF1H104ZF | 0.1μF | 1 |
| C60, 61 | ECUV1H104ZFX | 0.1μF | 2 |
| C63, 64 | ECUV1H101JG | 100pF | 2 |
| C65 | ECUV1H333KBX | 0.033μF | 1 |
| C66~69 | ERJ6GEY0R00V | 0Ω | 4 |
| C70 | ECUV1H103KBG | 0.01μF | 1 |
| C71 | ECUV1H104ZFX | 0.1μF | 1 |

| Ref. No. | Part No. | Description | P/S |
|---|---|---|---|
| C72 | ECUV1C104KBX | CERAMIC CAPACITOR, MULTI LAYER | 1 |
| C73, 74 | ECUV1H100DCN | 10pF | 2 |
| C75~77 | ECUV1H104ZFX | 0.1μF | 3 |
| C78, 79 | ECUV1H100DCN | 10pF | 2 |
| C80 | ECUV1H104ZFX | 0.1μF | 1 |
| C83 | ECUV1H333KBX | 0.033μF | 1 |
| C84 | ECUV1H104ZFX | 0.1μF | 1 |
| C85 | ECUV1H472KBG | 0.0047μF | 1 |
| C86 | ECUV1H223KBX | 0.022μF | 1 |
| C87 | ECUV1H182JX | MULTILAYER CERAMIC CHIP CAPACITOR | 1 |
| C88 | ECEA1HKA010 | 1μF, 50V | 1 |
| C89, 90 | ECUV1H104ZFX | 0.1μF | 2 |
| C91 | ECQV1H104JM | 0.1μF | 1 |
| C92, 93 | ECUV1H221JG | 220pF | 2 |
| C94~98 | ECUV1H104ZFX | 0.1μF | 5 |
| C99 | ECEA1CKA101 | 100μF, 16V | 1 |
| C101 | ECUV1H104ZFX | 0.1μF | 1 |
| C102~104 | ECRF1H104ZF | 0.1μF | 3 |
| C105 | ECUV1H104ZFX | 0.1μF | 1 |
| C107 | ECEA1CKA100 | 10μF, 16V | 1 |
| C109 | ECUV1H103KBG | 0.01μF | 1 |
| C110 | ECEA0JU102 | 1000μF, 6.3V | 1 |
| C111~113 | ECUV1H104ZFX | 0.1μF | 3 |
| C114 | ECEA0JKA470 | 47μF 6.3V | 1 |
| C115 | EECS5R5V105 | 1F, 5.5V, MEMORY BACK-UP | 1 |
| C116 | ECEA1CKA100 | 10μF16V | 1 |
| C117 | EECS5R5V105 | 1F, 5.5V, MEMORY BACK-UP | 1 |
| C118~126 | ECUV1H104ZFX | 0.1μF | 9 |
| C127, 128 | ECUV1H060DCN | 6pF | 2 |
| C129~143 | ECUV1H104ZFX | 0.1μF | 15 |
| C144 | ECUV1H470JG | 47pF | 1 |
| C145 | ECUV1H104ZFX | 0.1μF | 1 |
| C146 | ECEA0JU102 | 1000μF, 6.3V | 1 |
| C147~149 | ECUV1H104ZFX | 0.1μF | 3 |
| C150 | ECEA0JKA470 | 47μF, 6.3V | 1 |
| C151 | ECUV1H102JX | 0.001μF | 1 |
| C152 | ECUV1H100DCN | 10pF | 1 |
| C153~156 | ECUV1H104ZFX | 0.1μF | 4 |
| C157, 158 | ECRF1H104ZF | 0.1μF | 2 |
| C159 | ECUV1H102JX | 0.001μF | 1 |
| C160 | ECUV1H100DCN | 10pF | 1 |
| C161 | ERJ6GEY0R00V | 0Ω | 1 |
| C162~165 | ECUV1H104ZFX | 0.1μF | 4 |
| C166, 167 | ECUV1H102JX | 0.001μF | 2 |
| C168~171 | ECUV1H104ZFX | 0.1μF | 4 |
| C172 | ECRF1H104ZF | 0.1μF | 1 |
| C173 | ECQV1H104JM | 0.1μF | 1 |
| C174, 175 | ECUV1H470JG | 47pF | 2 |
| C176, 177 | ECEA1CKN100 | 10μF, 16V | 2 |
| C178, 179 | ECUV1H103KBG | 0.01μF | 2 |
| C181, 182 | ECUV1H222KX | 0.0022μF | 2 |
| C183 | ECUV1H104ZFX | 0.1μF | 1 |
| C184, 185 | ECUV1H222KX | 0.0022μF | 2 |
| C186 | ECUV1H104ZFX | 0.1μF | 1 |
| C187 | ECUV1H220JCN | 22pF | 1 |
| C188 | ECUV1C224KBX | CERAMIC CAPACITOR, MULTI LAYER | 1 |
| C189 | ECQV1H104JM | 0.1μF | 1 |
| C190 | ECUV1H101JG | 100pF | 1 |
| C191, 192 | ECEA1CKN100 | 10μF, 16V | 2 |
| C194 | ECUV1H221JG | 220pF | 1 |
| C195, 196 | ECUV1H104ZFX | 0.1μF | 2 |
| C198, 199 | ECUV1H221JG | 220pF | 2 |
| C200 | ECUV1H470JG | 47pF | 1 |
| C201~212 | ECUV1H104ZFX | 0.1μF | 12 |
| C213, 214 | ECUV1E224ZFX | 0.22μF | 2 |
| C216~219 | ECEA1HKN010 | 1μF, 50V | 4 |
| C220 | ECUV1H101JG | 100pF | 1 |
| C221 | ECEA1EKA100 | 10μF, 25V | 1 |

| Ref. No. | Part No. | Description | P/S |
|---|---|---|---|
| C222~225, 227, 228 | ECUV1H104ZFX | 0.1µF | 6 |
| C229-231 | ECUV1H100DCN | 10pF | 3 |

## HP HEADPHONES CIRCUIT

| Ref. No. | Part No. | Description | P/S |
|---|---|---|---|
| **COILS** | | | |
| L10, 11 | QLQGT3T150SA | 15µH×3 | 2 |
| **JACK** | | | |
| JK1 | SJJG100A | JACK | 1 |
| **CAPACITOR** | | | |
| C91 | ECRF1H104ZF | 0.1µF | 1 |

## MB2 MODULATION BALL 2 CIRCUIT

| Ref. No. | Part No. | Description | P/S |
|---|---|---|---|
| **VARIABLE RESISTOR** | | | |
| VR2 | QRVG22B01B54 | VARIABLE RESISTOR | 1 |

## ACP AC POWER SUPPLY CIRCUIT

| Ref. No. | Part No. | Description | P/S |
|---|---|---|---|
| **DIODES** | | | |
| D1~4 ⚠ | SVDS3V20 | RECTIFIER | 4 |
| D5~8 ⚠ | SVDGERA1502 | RECTIFIER | 4 |
| D9 | MA4220M | ZENER, 22V | 1 |
| **LINE FILTER** | | | |
| L1 ⚠ | SLTGLF3 | LINE FILTER | 1 |
| **FUSES** | | | |
| F1 ⚠ | XBA1C16NU100 | 1.6A, 125V, M MC XM | 1 |
| F1 ⚠ | XBA2C10TB0 | T1.0A, 250V, X XR XS XD XT | 1 |
| F2 ⚠ | XBA2C05TB0 | T500mAL, 250V, EN EK EZ EW EF EA EH EP XL XP X XR XS XD XT | 1 |
| F3 ⚠ | XBA2C20TB0 | T2A, 250V, EN EK EZ EW EF EA EH EP XL XP X XR XS XD XT | 1 |
| F3 ⚠ | XBA1C25NU100 | 2.5A, 125V, M MC XM | 1 |

| Ref. No. | Part No. | Description | P/S |
|---|---|---|---|
| **RESISTORS** | | | |
| R1, 2 | ERDS2TJ103 | 10KΩ | 2 |
| R3 ⚠ | ERD2FCVJ4R7 | 4.7Ω, 1/4W, FUSE TYPE | 1 |
| R4 | ERDS2TJ471 | 470Ω | 1 |
| R5 ⚠ | ERX2ANJPR22S | 0.22Ω, 2W, FLAME-PROOF | 1 |
| R6 ⚠ | ERQ1CJP220S | FUSE RESISTOR, 1W | 1 |
| R7~9 ⚠ | ERD2FCVJ4R7 | 4.7Ω, 1/4W, FUSE TYPE | 3 |
| **CAPACITORS** | | | |
| C1 ⚠ | ECKCVA1472MF | 4700pF, LINE CAPACITOR | 1 |
| C2 ⚠ | ECQU2A104MT | 0.1µF, 250V, ACROSS-THE LINE CAPACITOR | 1 |
| C3 ⚠ | ECQE1A104M6 | 0.1µF, 125V | 1 |
| C4 ⚠ | ECEA1EU222 | 2200µF, 25V | 1 |
| C5 ⚠ | ECA1EM682E | 6800µF, 25V | 1 |
| C6 | ECEA1VKA100 | 10µF, 35V | 1 |
| C7 | ECEA1VKA330 | 33µF, 35V | 1 |
| C8 | ECEA1EU101 | 100µF, 25V | 1 |
| C9, 10 | ECA1EM331 | ALUMINIUM CAPACITOR | 2 |

## INV INVERTER CIRCUIT

| Ref. No. | Part No. | Description | P/S |
|---|---|---|---|
| **TRANSISTORS** | | | |
| Q1, 2 | 2SC3940ARS | TRANSISTOR | 2 |
| **TRANSFORMER** | | | |
| T1 ⚠ | QTDG003A | TRANSFORMER | 1 |
| **IC PROTECTOR** | | | |
| IP1 ⚠ | ICP-N10T104 | IC PROTECTOR | 1 |
| **RESISTORS** | | | |
| R1, 2 | ERDS2TJ562 | 5.6KΩ | 2 |
| **CAPACITORS** | | | |
| C1 | ECEA0JKA101 | 100µF, 6.3V | 1 |
| C2 | ECRF1H104ZF | 0.1µF | 1 |
| S C3 | ECCD3F180JGE | 18pF | 1 |
| C5 | ECHS1473JZW | 0.047µF | 1 |

## CP1 CONTROL PANEL 1 CIRCUIT

| Ref. No. | Part No. | Description | P/S |
|---|---|---|---|
| **INTEGRATED CIRCUITS** | | | |
| IC1 | M37471M2196S | 16 BIT MICROCOMPUTER | 1 |
| IC3 | HD74LS07P | HEX BUFFERS | 1 |
| **TRANSISTORS** | | | |
| S Q2, 3, 5 | 2SA1015-GR | 2SA933STRS (SUB. PART) | 3 |

| Ref. No. | Part No. | Description | P/S |
|---|---|---|---|
| **DIODES** | | | |
| D1~23, 25~48 | MA165 | DIODE | 47 |
| D116~119, 131 | LN382G | LED (GREEN) | 5 |
| D120~123, 130 | LN282R | LED (RED) | 5 |
| **OSCILLATOR** | | | |
| X1 | EF0EC4004A3 | 4MHz, CERAMIC OSCILLATOR | 1 |
| **SWITCHES** | | | |
| ESW1 | QSRGT002AA | ENCODER SWITCH | 1 |
| S1~23, 25~48 | EVQ21507K | PUSH SWITCH | 47 |
| **IC PROTECTOR** | | | |
| IP1 ⚠ | ICP-N10T104 | IC PROTECTOR | 1 |
| **RESISTORS** | | | |
| R1~4 | ERDS2TJ680 | 68Ω | 4 |
| R13, 14, 16~25 | ERDS2TJ103 | 10KΩ | 12 |
| R26 | ERDS2TJ333 | 33KΩ | 1 |
| R27, 28 | ERDS2TJ101 | 100Ω | 2 |
| R29, 30 | ERDS2TJ472 | 4.7KΩ | 2 |
| R31, 32 | ERDS2TJ473 | 47KΩ | 2 |
| R36 | ERDS2TJ102 | 1KΩ | 1 |
| **CAPACITORS** | | | |
| C1, 3 | ECRF1H104ZF | 0.1μF | 2 |
| C4 | ECEA0JKA221 | 220μF, 6.3V | 1 |
| C5 | ECRF1H104ZF | 0.1μF | 1 |
| C6 | ECEA0JKA470 | 47μF, 6.3V | 1 |
| C7, 8 | ECBA1H102KB | 0.001μF | 2 |
| C12 | ECRF1H104ZF | 0.1μF | 1 |

## CP2 CONTROL PANEL 2 CIRCUIT

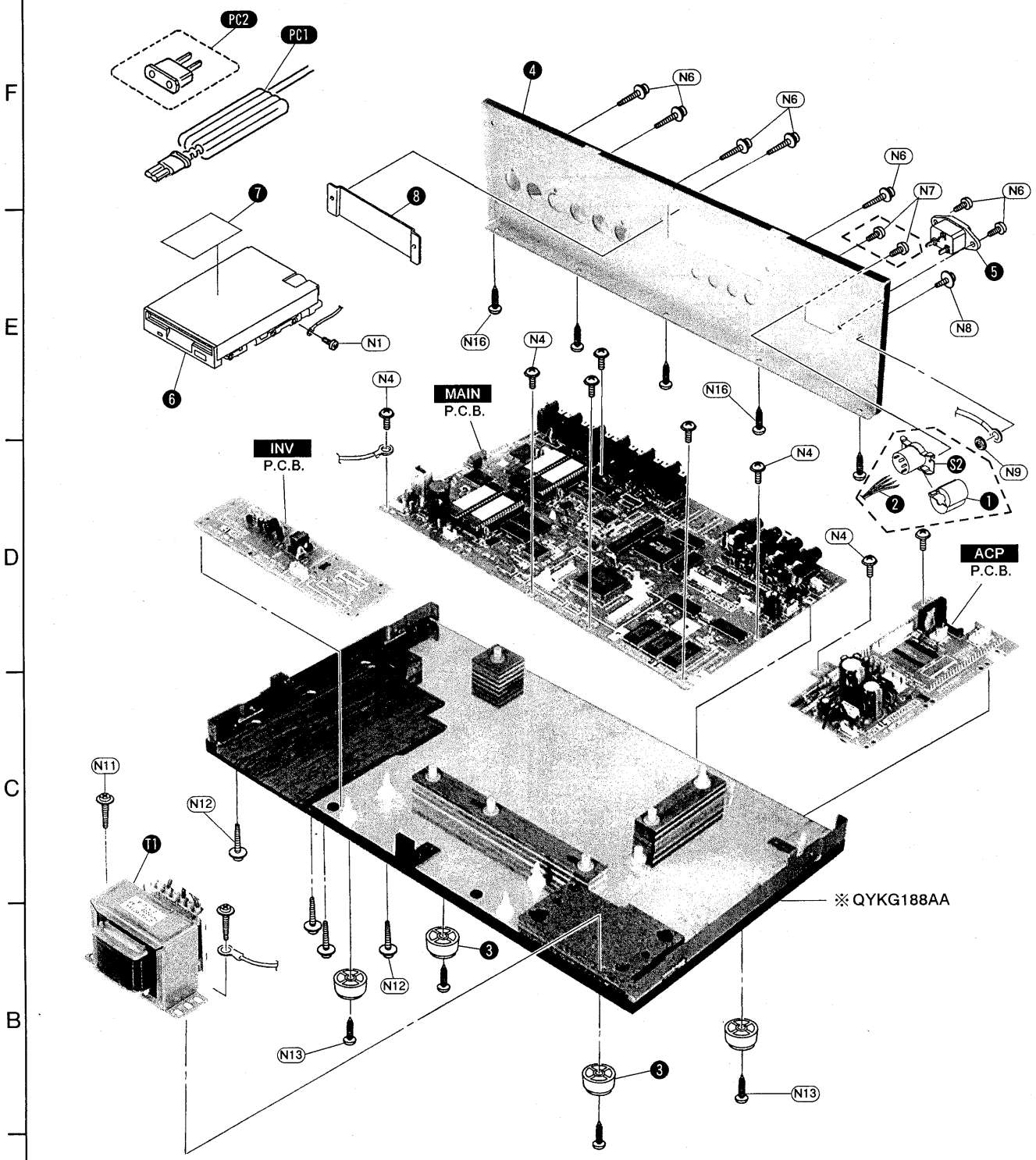
| Ref. No. | Part No. | Description | P/S |
|---|---|---|---|
| **TRANSISTOR** | | | |
| S Q6 | 2SA1015-GR | 2SA933STRS (SUB. PART) | 1 |
| **DIODES** | | | |
| D57~60, 65, 66, 73~77 | MA165 | DIODE | 11 |
| D138~141 | LN282R | LED (RED) | 4 |
| D160~163 | LN382G | LED (GREEN) | 4 |
| **SWITCHES** | | | |
| S57~60, 65, 66, 73~77 | EVQ21507K | PUSH SWITCH | 11 |
| **VARIABLE RESISTORS** | | | |
| ○ VR1 | EVUF2JFK3B53 | VARIABLE RESISTOR, 0.05W | 1 |
| ○ VR2 | EVUF2AE20B14 | VARIABLE RESISTOR, 0.05W | 1 |

| Ref. No. | Part No. | Description | P/S |
|---|---|---|---|
| **RESISTORS** | | | |
| R5, 6 | ERDS2TJ680 | 68Ω | 2 |
| R37 | ERDS2TJ102 | 1KΩ | 1 |
| R38 | ERDS2TJ222 | 2.2KΩ | 1 |

## ■WIRING PARTS

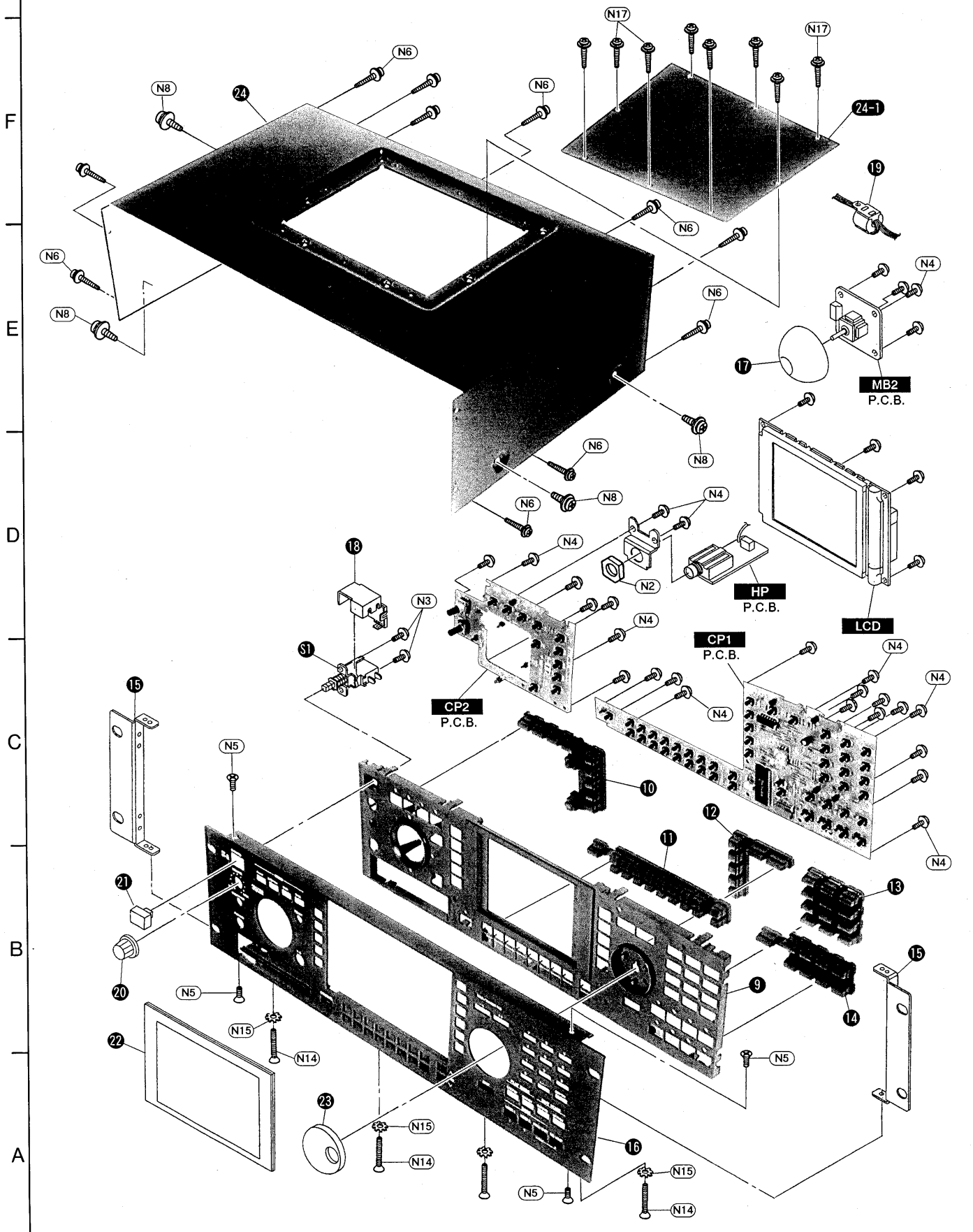
| Ref. No. | Part No. | Description | P/S |
|---|---|---|---|
| W1 ⚠ | QEXGVH03055B | CONNECTOR WITH WIRE | 1 |
| W2 ⚠ | QEXGVH04010B | COMMU CABLE W/OUT PLUG | 1 |
| ○ W3 ⚠ | QEXGVH07015C | COMMU CABLE W/OUT PLUG, X XR XS XD XT | 1 |
| W4 ⚠ | QEXGSS06050A | CONNECTOR WITH WIRE | 1 |
| ○ W5 ⚠ | QEXGST03060A | COMMU CABLE W/OUT PLUG | 1 |
| W6 ⚠ | QEXGZA34015A | COMMU CABLE W/OUT PLUG | 1 |
| ○ W7 ⚠ | QEXGZA14045B | COMMU CABLE W/OUT PLUG | 1 |
| ○ W8 ⚠ | QEXGSS04015A | COMMU CABLE W/OUT PLUG | 1 |
| ○ W9 ⚠ | QEXGSA06020A | COMMU CABLE W/OUT PLUG | 1 |
| ○ W10 ⚠ | QEXGSA08055A | COMMU CABLE W/OUT PLUG | 1 |
| ○ W11 ⚠ | QEXGST05025A | COMMU CABLE W/OUT PLUG | 1 |
| ○ W12 ⚠ | QEXGSA10026A | COMMU CABLE W/OUT PLUG | 1 |
| ○ W13 ⚠ | QEXGSA07040A | COMMU CABLE W/OUT PLUG | 1 |
| ○ W14 ⚠ | QEXGXH04012A | COMMU CABLE W/OUT PLUG | 1 |

# CABINET PARTS LOCATION (A)




**Note:** The marking (※) indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time.

# CABINET PARTS LOCATION (B)



# REPLACEMENT PARTS LIST.....Cabinet and Chassis Parts

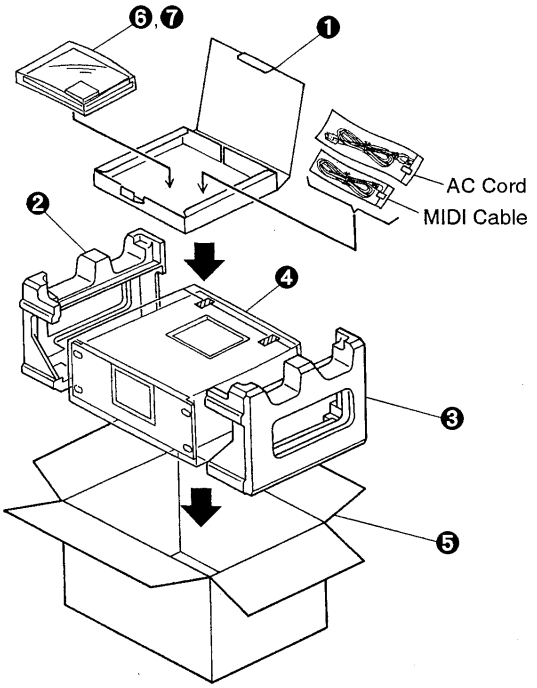
**Notes:**

1. The marking (RTL) indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retension period of availability is dependant on the type of assembly, and in accordance with the laws governing part and product retention.
   After the end of this period, the assembly will no longer be available.
2. ○ mark are new parts.
3. Important safety notice
   Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
4. For part No. with area mark, check the area when placing an order.
5. The raw material indication for synthetic resin
   In order to facilitate classification of parts of synthetic resin manufacture and to promote the recycling of natural resources, a raw material symbol for such parts is indicated in the Ref. No./ Material column.

## ■CABINET & CHASSIS PARTS

| | Ref. No. | | Part No. | Description | P/S |
|---|---|---|---|---|---|
| | | | **SWITCHES** | | |
| | S1 | ⚠ | ESB8273V | POWER SWITCH | 1 |
| | S2 | ⚠ | ESE37209 | VOLTAGE SELECTOR, X XR XS XD XT | 1 |
| | | | **TRANSFORMER** | | |
| | T1 | ⚠ | QTPG1M036A | POWER TRANSFORMER, EN EK EZ EW EF EA EH EP XL XP | 1 |
| | T1 | ⚠ | QTPG1M035A | POWER TRANSFORMER, M MC XM | 1 |
| | T1 | ⚠ | QTPG1M037A | POWER TRANSFORMER, X XR XS XD XT | 1 |
| | | | **POWER CORD & PLUG** | | |
| | PC1 | ⚠ | QJAG018AA | POWER CORD W/PLUG, 240V, EN EZ EF EA EH EP X XS XD XT XP | 1 |
| | PC1 | ⚠ | QJAG020AA | POWER CORD W/PLUG, 240V, EK | 1 |
| | PC1 | ⚠ | QJAG021AA | POWER CORD W/PLUG, 240V, EW | 1 |
| | PC1 | ⚠ | QJAG019AA | POWER CORD W/PLUG, 240V, XL XR | 1 |
| | PC1 | ⚠ | SJAG44 | POWER CORD W/PLUG, 120V, M MC XM | 1 |
| | PC2 | ⚠ | SJP5213-1 | ATTACHMENT PLUG, X XT XP | 1 |
| | | | **CABINET PARTS** | | |
| | 1 | | SUV453 | SWITCH COVER, X XR XS XD XT | 1 |
| ○ | 2 | ⚠ | QEXGVH07015C | COMMU CABLE W/OUT PLUG, X XR XS XD XT | 1 |
| | 3 | | SHRG2160A | LEG | 4 |
| ○ | 4 | | QGKG0128AA | REAR PANEL, X XR XS XD XT | 1 |
| ○ | 4 | | QGKG0128BA | REAR PANEL, EN EK EZ EW EF EA EH EP XL XP M MC XM | 1 |
| | 5 | ⚠ | SJSG460A | PLUG | 1 |
| | 6 | ⚠ | QAUG012AA | DDR DRIVE UNIT | 1 |
| | 7 | | QMRG2023AA | FELT | 1 |
| | 8 | | QGKG0126AA | LID | 1 |
| ○ | 9 | PS | QGPG0112AA | PLATE, PS | 1 |
| ○ | 10 | | QGUG1423AAK | PUSH BUTTON | 1 |
| ○ | 11 | | QGUG1424AAK | PUSH BUTTON | 1 |
| ○ | 12 | | QGUG1425AAK | PUSH BUTTON | 1 |
| ○ | 13 | | QGUG1426AAK | PUSH BUTTON | 1 |
| ○ | 14 | | QGUG1427AAK | PUSH BUTTON | 1 |
| ○ | 15 | | QMAG0170AA | PLATE, STEEL | 2 |
| ○ | 16 | | QGPG0111AA | FRONT PANEL | 1 |
| | 17 | ABS | QGUG3008AA | BALL | 1 |
| | 18 | | SHRG8390A | COVER, POWER SW | 1 |
| | 19 | ⚠ | QLZG005A | CORE | 1 |
| | 20 | | SBNG4010A | VOLUME KNOB | 1 |
| | 21 | | SBCG110B | BUTTON, POWER SWITCH | 1 |
| ○ | 22 | | QKWG026AA | PLATE | 1 |
| | 23 | ABS | QGUG3002BB | DIAL WHEEL | 1 |
| ○ | 24 | | QKSGA003AA | TOP PANEL ASS'Y | 1 |
| ○ | 24-1 | | (QMAG0152AA | LID | 1 |
| | | | **SCREWS & WASHERS** | | |
| | N1 | | XYN3+F8 | SCREW WITH WASHER | 1 |
| | N2 | | XNS12FZ | NUT | 1 |
| | N3 | | XTB3+10B | SCREW | 2 |
| | N4 | | XTW3+10Q | SCREW | 30 |
| ○ | N5 | | XTS3+8JFZ | SCREW | 4 |
| ○ | N6 | | XYA3+DJ10FZ | SCREW W/WASHER | 18 |
| | N7 | | XYN3+F10FZ | SCREW WITH WASHER, X XR XS XD XT | 2 |
| | N8 | | XYN4+F10FZ | SCREW WITH WASHER | 5 |
| | N9 | | SNE499-1 | NUT | 1 |
| | N11 | | XYN4+F12 | SCREW WITH WASHER | 2 |
| | N12 | | XYN3+F10FZ | SCREW WITH WASHER | 4 |
| | N13 | | XTB3+12AFZ | SCREW | 4 |
| ○ | N14 | | XSS3+20FZ | SCREW | 4 |
| ○ | N15 | | XWC3DFZ | WASHER | 4 |
| | N16 | | XTB35+10AFZ | SCREW | 5 |
| | N17 | | XTB3+8JFZ | SCREW | 6 |

# PACKING




## ■PACKING PARTS

| Ref. No. | | Part No. | Description | P/S |
|---|---|---|---|---|
| | | **PACKING PARTS** | | |
| ○ 1 | | QPGG0341AA | PACKING CASE, PAPER | 1 |
| ○ 2 | PS | QPNG0567AA | PAD, PS | 1 |
| ○ 3 | PS | QPNG0568AA | PAD, PS | 1 |
| ○ 4 | PE | QPHG083AA | BAG, POLYETHYLENE | 1 |
| ○ 5 | | QPGG0340AA | PACKING CASE, PAPER | 1 |
| 6 | | QFVG2013A | DEMO DISK | 1 |
| | | **OPERATING INSTRUCTION MANUAL** | | |
| 7 | | QQFGWSA1AA | OPERATING INSTRUCTION MANUAL, EN | 1 |
| 7-1 | | QQTG0359A | DANSK | 1 |
| 7-2 | | QQTG0360A | ENGLISH | 1 |
| 7-3 | | QQTG0361A | ENGLISH | 1 |
| 7 | | QQFGWSA1CA | OPERATING INSTRUCTION MANUAL, M | 1 |
| 7-1 | | QQTG0364A | ENGLISH | 1 |
| 7-2 | | QQTG0365A | ENGLISH | 1 |
| 7 | | QQFGWSA1DA | OPERATING INSTRUCTION MANUAL, MC | 1 |
| 7-1 | | QQTG0360A | ENGLISH | 1 |
| 7-2 | | QQTG0366A | FRANCAIS | 1 |
| 7-3 | | QQTG0361A | ENGLISH | 1 |
| 7-4 | | QQTG0367A | FRANCAIS | 1 |
| 7 | ⚠ | QQFGWSA1EA | OPERATING INSTRUCTION MANUAL, EK EP X XS XL XR XM XD XT XP | 1 |
| 7-1 | | QQTG0360A | ENGLISH | 1 |
| 7-2 | | QQTG0361A | ENGLISH | 1 |

| Ref. No. | Part No. | Description | P/S |
|---|---|---|---|
| 7 | QQFGWSA1FA | OPERATING INSTRUCTION MANUAL, EA | 1 |
| 7-1 | QQTG0368A | DEUTSCH | 1 |
| 7-2 | QQTG0369A | DEUTSCH | 1 |
| 7 | QQFGWSA1GA | OPERATING INSTRUCTION MANUAL, EW | 1 |
| 7-1 | QQTG0366A | FRANCAIS | 1 |
| 7-2 | QQTG0368A | DEUTSCH | 1 |
| 7-3 | QQTG0367A | FRANCAIS | 1 |
| 7-4 | QQTG0369A | DEUTSCH | 1 |
| 7-5 | QQTG0370A | ITALIANO | 1 |
| 7-6 | QQTG0361A | ENGLISH | 1 |
| 7 | QQFGWSA1HA | OPERATING INSTRUCTION MANUAL, EF | 1 |
| 7-1 | QQTG0366A | FRANCAIS | 1 |
| 7-2 | QQTG0370A | ITALIANO | 1 |
| 7-3 | QQTG0367A | FRANCAIS | 1 |
| 7-4 | QQTG0361A | ENGLISH | 1 |
| 7 | QQFGWSA1JA | OPERATING INSTRUCTION MANUAL, EH | 1 |
| 7-1 | QQTG0368A | DEUTSCH | 1 |
| 7-2 | QQTG0371A | NERDERLANDS | 1 |
| 7-3 | QQTG0369A | DEUTSCH | 1 |
| 7-4 | QQTG0361A | ENGLISH | 1 |
| 7-5 | QQTG0366A | FRANCAIS | 1 |
| 7-6 | QQTG0367A | FRANCAIS | 1 |
| 7 | QQFGWSA1KA | OPERATING INSTRUCTION MANUAL, EZ | 1 |
| 7-1 | QQTG0368A | DEUTSCH | 1 |
| 7-2 | QQTG0369A | DEUTSCH | 1 |

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